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SPENCER CREEK WATERSHED MANAGEMENT PLAN

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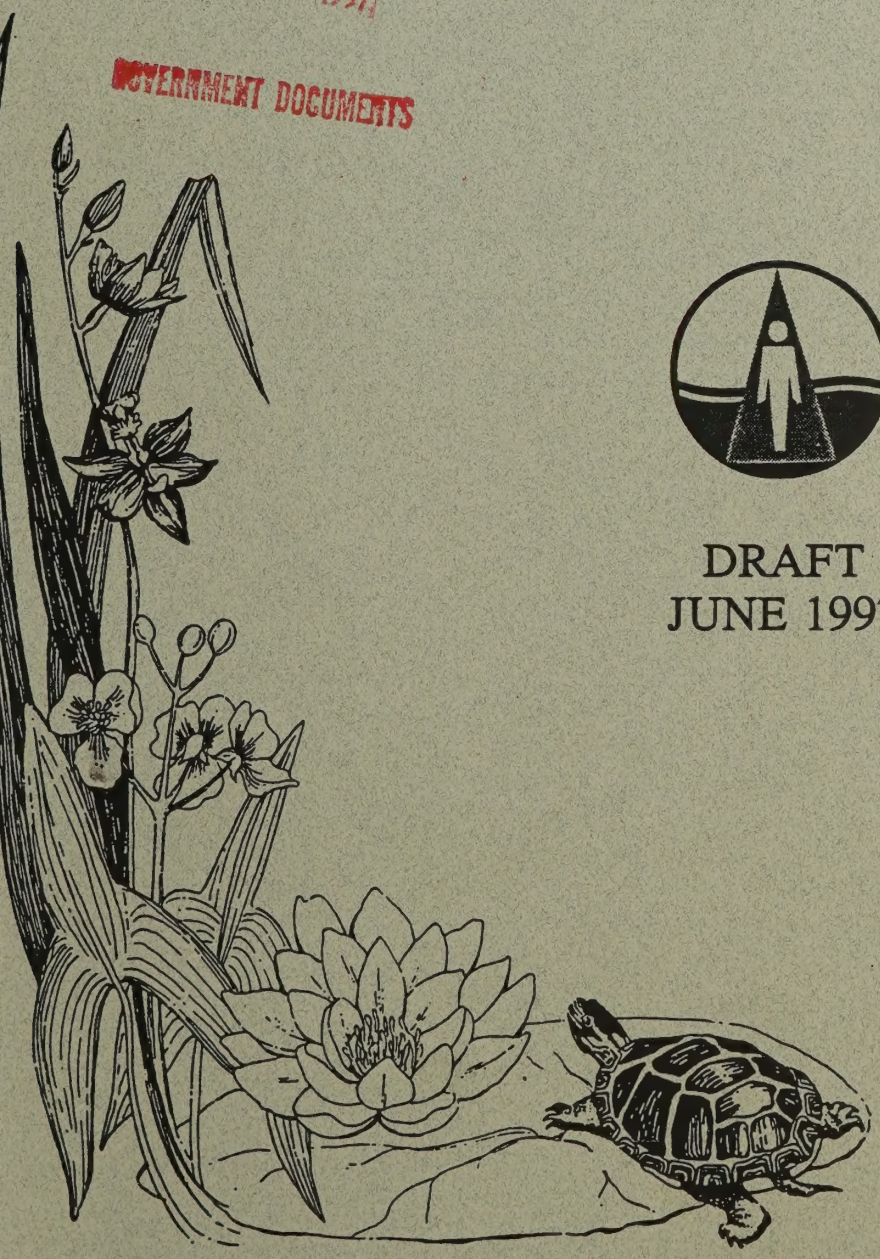
JUL 1997

GOVERNMENT DOCUMENTS



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JUNE 1997

Hamilton Region Conservation Authority

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1.0 EXECUTIVE SUMMARY

The Spencer Creek Watershed Plan is an integrated watershed management plan for the ecosystem of the Spencer Creek. It is a project of the Hamilton Region Conservation Authority, funded through Environment Canada, the Regional Municipality of Hamilton-Wentworth, and the Ministry of Natural Resources. The study was completed in cooperation with a group of stakeholders from the community, commerce and government:

Bay Area Restoration Council
City of Hamilton
Dundas Conservers Society
Friends of the Dundas Valley
Halton Region Conservation Authority
Hamilton Area Fly Fishers & Tyers
Hamilton Naturalists Club
Hamilton-Halton Homebuilders Assoc.
Ministry of Natural Resources
Ministry of Environment and Energy
OSCIA
Region of Hamilton-Wentworth
Royal Botanical Gardens
Spencer Creek Environmental Watch
Town of Ancaster
Town of Dundas
Town of Flamborough
Township of Puslinch

The study began in February 1996. We began by reviewing the volumes of information gathered over the past 30 years by the Conservation Authority, and other agencies in the watershed. Staff from the Conservation Authority contacted watershed residents to find out what they valued in their watershed. We spoke to various groups, school classes and all levels of government.

In October the HRCA hosted Public Open Houses in Dundas and Valens. We presented some of the initial findings, and received a number of interesting perspectives from the residents attending.

Since October of 1996, Conservation Authority staff have been working with the project steering committee to prepare a draft watershed plan. Over the past eight months we talked to citizens and interest groups, as well as the local and regional governments. We held a watershed tour in January, and are continuing to work with watershed agencies to promote awareness of the Hamilton Harbour Watershed.

The Draft Watershed Plan is now available for public review. It contains 35 management recommendations aimed at improving the health of the Spencer Creek Watershed, and restoring balance to the landscape.

The subwatersheds of the Spencer have also been characterized in Section 7.0. Subwatershed summaries provide information at a local level, identify ecosystem stresses, and opportunities for restoration.

All members of the community will be involved in implementing this plan. The management recommendations range from simple activities like planting more trees, and water conservation to the more complex issues of modifying Official Plans and reviewing the feasibility of water control structures.

Anybody who lives, works or pursues outdoor activities in the Spencer Creek Watershed will benefit from a healthier ecosystem. The watershed explains how individuals can take steps to improve the Spencer Creek Watershed and the quality of life it affords.

2.0 INTRODUCTION

The ecosystem approach recognizes that ecosystems have limits to stress and accommodation should be made before there is irreversible degradation or destruction to the system (M.O.E.E. and M.N.R., 1992)

The ecosystem of the Spencer Creek watershed is dynamic and changes in response to stresses. Sometimes the stresses exceed the ecosystem's ability to respond, resulting in degradation or loss of vital components. This can be seen in areas such as the Anne Morden Creek, in Dundas, where extensive residential development and encroachment into the natural valley has diminished the function of the creek as a migration corridor.

For many years land use decisions were made without consideration for potential impacts to the ecosystem. The ecosystem adapted to many of the changes, but some impacts resulted in unrecoverable losses. Large predators like the black bear and cougar were once present in the watershed, but could not adapt to the changes brought on by settlement. The landscape of the watershed also suffered. Approximately 50% of the original wetlands were lost by 1985.(E. Snell - Environment Canada Lands Directorate)

In recent years there has been a growing awareness of our place in the natural environment. Historically most residents of the watershed saw natural areas as resources, to be consumed. Through the early efforts of the Hamilton Naturalists' Club, Conservation Authorities, and concerned citizens, the perspective began to shift. The publication of the Hamilton Harbour Remedial Action Plan, marked a renewed enthusiasm for the environment, supported by government, commerce and citizens. Watershed residents are beginning to see themselves as part of the ecosystem, with a responsibility for stewardship.

The Spencer Creek Watershed Plan is based on the ecosystem approach where humans are considered part of the natural environment, not separate from it. The environmental, social, and economic values of our watershed are given equal consideration. Understanding watershed issues and their interrelationships is key to a successful watershed plan.

Watersheds

Everything in a watershed is connected. Watersheds are natural boundaries that transcend political jurisdictions. The hydrologic cycle connects everything in the watershed. Activities in one area could

affect lands downstream. When planning is based on political boundaries, land use decisions made in an upstream municipality may not consider the potential impacts on other municipalities down stream.

Watershed planning consolidates and integrates information allowing decision makers to consider land use decisions in light of potential benefits and impacts to the natural ecosystem.

By consolidating information and using the ecosystem approach, the Spencer Creek Watershed Plan will:

- Provide clear direction on watershed management priorities.
- Identify gaps in the knowledge of our watershed.
- Set targets for protection, rehabilitation and restoration.
- Contribute to a healthier watershed for all residents.

3.0 VISION

Our vision is a healthy stream in a healthy landscape.

There will be high bio-diversity in both terrestrial and aquatic habitat, protected wetlands and limited erosion. There will be a place for agriculture and limited urban and residential development.

An informed community of citizens, industry and government will achieve this through a co-operative and ecological approach.

4.0 GOAL AND PRINCIPLES

The goal of the Spencer Creek Watershed Plan is to identify the natural environmental attributes of the watershed, and recommend appropriate strategies for the protection, restoration and enhancement of these features, with consideration for social and economic needs of watershed residents.

The watershed plan is based on the following principles:

The Ecosystem Approach to Planning

The ecosystem planning approach considers Environmental, Social and Economic issues and the relationships between them. This approach attempts to balance all the interests and apply them to land-use decisions.

Plan Integration

Conservation Authorities have been working in the Spencer Creek watershed for the past 30 years, assembling a variety of studies and data. Upper and lower tier municipalities have a wealth of information on land-use planning and infrastructure. The majority of these studies focus on specific issues, such as economic trends, natural areas, housing demands or servicing requirements. The Spencer Creek Watershed Plan will combine information from these studies to provide an integrated document with clear recommendations for land-use and resource management.

Identification, Protection, Restoration

The Spencer Creek watershed has many significant natural, historic and cultural features that could be impacted by land use decisions. These special resources should be identified in planning documents and protected through statute or stewardship programs. Projects to restore or enhance these features should be promoted.

Landowner Stewardship

The watershed plan must respect a landowner's rights to manage their property in accordance with local, regional and provincial statutes.

Landowners already manage their properties based on their own environmental standards. The implementation of the watershed plan will involve working with landowners to promote awareness of environmentally friendly resource management techniques.

Watershed Health

Improving water quality and the natural systems of the watershed will contribute to the overall health of its residents. The watershed plan recommendations will further initiatives to restore habitat and enhance bio-diversity in the Hamilton Harbour Watershed.

Public Awareness and Understanding

In order to be effective, the Spencer Creek Watershed Plan must have the support of local residents and politicians. Through public consultation, groups and individuals will be invited to participate in the planning process and help implement the recommendations. The watershed plan should provide clear recommendations for action.

5.0 FORM FUNCTION LINKAGE

The Spencer Creek Watershed covers an area of 291 square kilometres, and is the main drainage area to Coote's Paradise. It is composed of several tributaries:

- *Ancaster Creek*
- *Borer's Creek*
- *Chedoke Creek*
- *Fletcher Creek*
- *Flamborough Creek*
- *Logie's Creek*
- *Spring Creek*
- *Tiffany Creek*
- *Sulphur Creek*
- *Sydenham Creek*
- *Westover Creek*
- *West Spencer Creek*

These watercourses are located in the municipalities of:

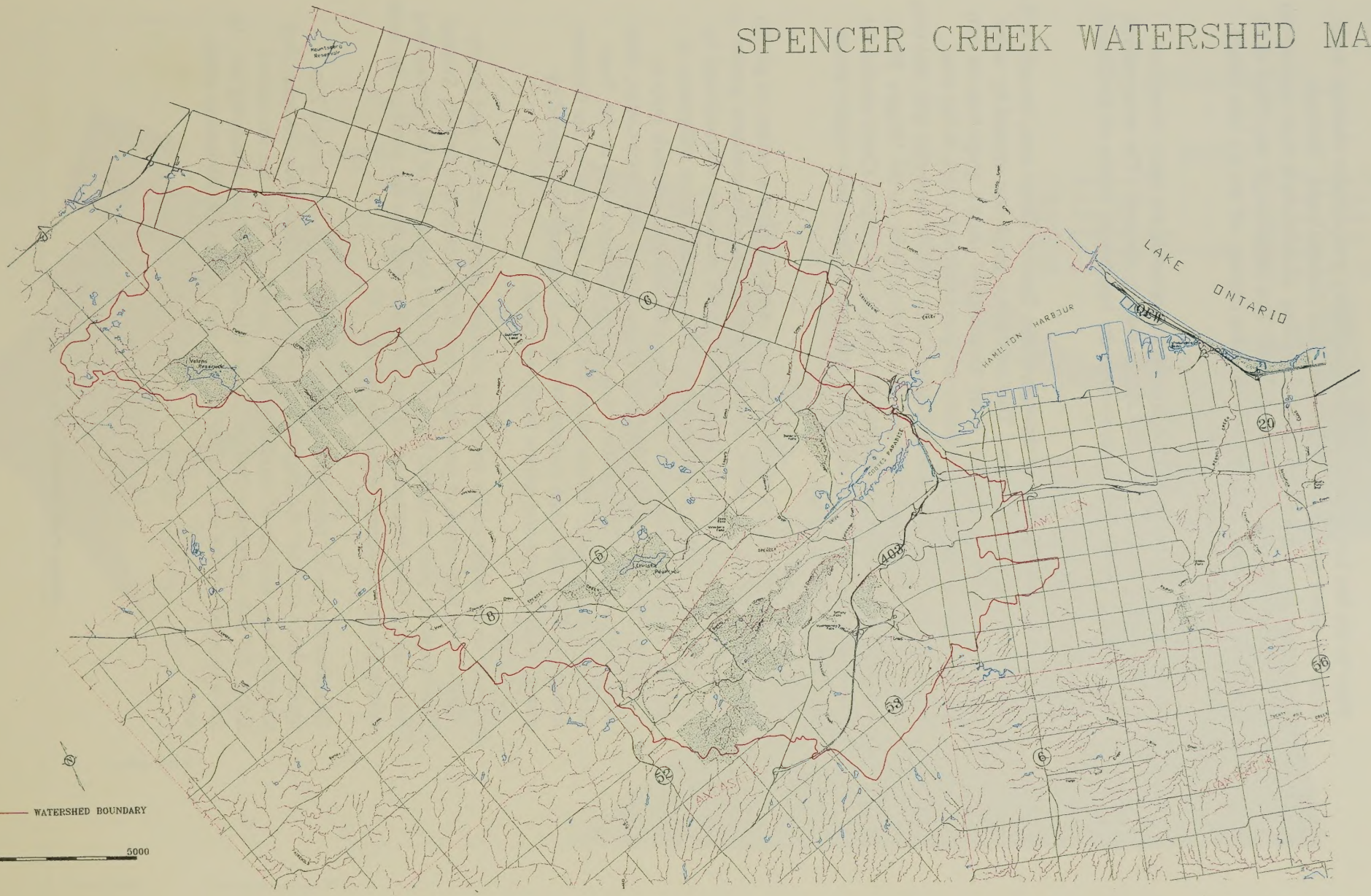
- Ancaster
- Dundas
- Flamborough
- Hamilton
- Puslinch

5.1 FORM & FUNCTION

The physiography of the Spencer Creek watershed is unique, containing a variety of landscapes. The Niagara Escarpment is one of the most prominent features in the watershed. This limestone ridge extends from the Niagara River to Tobermory in the Bruce Peninsula. It was formed by deposits at the bottom of an ancient tropical sea. Over thousands of years this ridge was sculpted by erosion, weathering and several glacial advances, into the feature visible today.

The Escarpment extends south to north through Hamilton, Ancaster, Dundas and Flamborough. In some areas, like the Dundas Peak, the Escarpment is a sheer exposed rock face. In the Dundas Valley, it is buried under glacial deposits ranging from a few centimetres deep, in some areas, to 15 metres in the vicinity of Copetown (Water Well Records for Ontario, 1946-1979).

SPENCER CREEK WATERSHED MAP



Hamilton Region Conservation Authority

Prior to the last ice advance, the Dundas Valley was a major drainage route from the upper great lakes basin to the Lake Ontario basin. Bedrock topography shows a definite trough extending 10 miles back from present-day Lake Ontario (Chapman & Putnam, 1966) This large trough was filled in by glacial till, and deep water silt/clay deposits coming off the ice lobe which occupied the Lake Ontario basin.

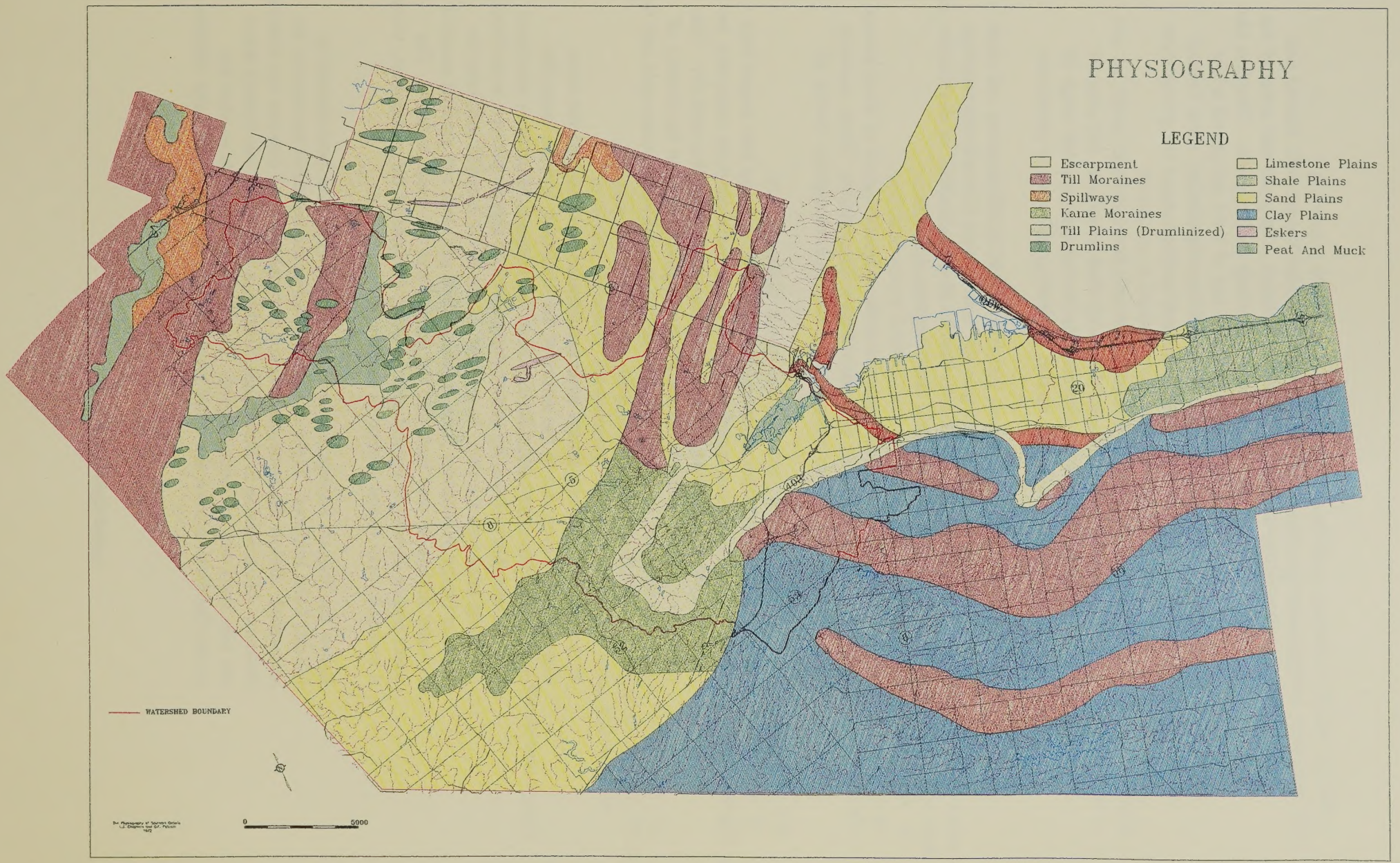
As the ice sheet melted, and the lake waters receded, the many rivers and creeks flowing through the valley began shaping the area. The water carved deep ravines, and eroded slopes to form the hummocky terrain of the Dundas Valley.

Pre-glacial erosion is evident throughout the Spencer Gorge area, thought to be another ancient drainage route. This impressive gorge was created by water tumbling over the escarpment. Over thousands of years a gorge was cut into the escarpment bedrock. Eventually the gorge reached a fork in the river where the Spencer Creek joined Logie's Creek and the waterfall split into two, much like the Horseshoe Falls and the American Falls on the Niagara River. The Spencer Creek eroded the Webster Gorge, and Logie's Creek eroded the Tews Falls Gorge. Today only small remnants of these once mighty rivers occupy the Spencer Gorge.

The influence of glaciers on the landscape can be seen in a variety of glacial deposits created by successive advances and retreats. The northern portion of the watershed, near Puslinch, is composed of till moraines, characterized by gravel deposits, spillways and swamps. This area acts as an infiltration or recharge area for groundwater. The many swamps and wetlands help to control the flow of water by detaining spring run-off and precipitation, then slowly releasing it. The constant flow of water is referred to as the "base flow" of a watercourse. These areas are also very important to the fisheries resources of the watershed because of the cool temperatures created by groundwater springs and stream bank vegetation.

As you move south in the watershed, the soils become shallow and poorly drained with large areas of peat/muck, especially around the Beverly Swamp. This limestone plain is dotted by large hills that spring out of the surrounding flat ground. These features are called Drumlins and they are some of the more unique glacial landforms of the watershed.

Drumlins are glacial deposits which have formed large hills shaped like upside-down spoons. As glaciers advanced and receded over this area, they sculpted large mounds of material, called "glacial till". As the ice moved along, the hills were smoothed out in the orientation of the advancing ice. In the watershed we can see that the ice was moving from north-east to south-west.


PHYSIOGRAPHY
LEGEND
Escarpment
Till Moraines
Spillways
Kame Moraines
Till Plains (Drumlinized)
Drumlins
Limestone Plains
Shale Plains
Sand Plains
Clay Plains
Eskers
Peat And Muck
WATERSHED BOUNDARY
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5000

The sorted granular materials that make up drumlins are well drained and provide excellent areas of groundwater recharge. They are also some of the more arable lands, compared to the surrounding shallow soils. Drumlins also contain some of the most sought after deposits of sand and gravel in the watershed. These features were cleared for agriculture and some limited gravel extraction, which affected the natural recharge areas for groundwater.

Moving further south in the watershed the soils become more sandy, as you pass into the Norfolk Sand Plain. The well drained soils in this area are ideally suited for agriculture. In fact, this area supports a wide range of agricultural industry including market gardening, and nursery operations.

Moving closer to the escarpment you enter a mix of till moraines and shale plains. The soil is shallow and gravelly with several bedrock outcroppings, especially in the vicinity of Borer's Creek. Because the soil, or overburden, is so shallow here, they were ideal sites for stone quarries.

There are two operating stone quarries in the watershed, both of them located in the shallow till moraines along the Niagara Escarpment. These resource extraction operations have a dramatic impact on the landscape during all phases of their life.

As rock is extracted from a quarry, the operation continues into deeper rock strata, often below the groundwater level. In order to continue extracting the rock, groundwater must be pumped away to keep the working area dry. This results in a change to the hydraulic regime of groundwater in the vicinity of quarry operations. A "cone of depression" is created in the water table and the groundwater level drops.

In the past, abandoned quarries were considered ideal locations for waste disposal. However, due to the nature of the limestone, and the extraction process, the pits were surrounded by fractured bedrock. Operators attempted to overcome this problem by constructing liners of clay to prevent water from migrating back into the site. In the case of the Brow Landfill site, near the Spencer Gorge Wilderness Area, a failing liner and poor cap grading resulted in water finding its way back into the quarry, and the waste material. The water makes its way to natural springs along the base of the escarpment, where it makes its way to the surface as leachate.

Below the Niagara Escarpment sand and silt deposits have been shaped by Glacial Lake Iroquoia. Signs of former beaches are scattered throughout the watershed. Below the escarpment beach terraces and sand deposits are distinct features. Most notable is Burlington Heights, a bay mouth bar formed when the lake level was 15 metres higher. The Hamilton Beach is another bay mouth bar formed when the water levels receded to present day Lake Ontario.

The Royal Botanical Gardens owns a significant portion of Cootes Paradise. The peat and muck soils once supported an extensive wetland stretching from Dundas to Burlington Heights. Today Project Paradise is attempting to regenerate the wetland and improve habitat opportunities.

The Haldimand Clay Plain is the only other physiographic feature in the watershed, not previously mentioned. This flat area, in Ancaster and Hamilton, is located south of Highway #2, above the escarpment. It is described as an area of stratified clay and till, characterized by heavy texture and poor drainage (Chapman & Putnam, 1966). Land use is predominantly residential development, however it supports some remnant agricultural operations.

5.2 LINKAGE

The distinct landforms of the watershed are linked by the movement of water, air and living organisms. The way we manage the groundwater recharge areas and headwaters determines water quality and habitat further downstream. If the flow of a watercourse is changed by a diversion or by large amounts of sediment, the watercourse will respond by seeking balance, impacting both upstream and downstream properties.

The watershed is a natural, dynamic system. Any stress to that system will result in a corresponding change. Pumping groundwater from one location *may* cause a depression in the watertable. As the groundwater level changes to restore balance, water is moving away from other areas.

The living landscape also connects our watershed, although not as well as it once did. Corridors along streams and creeks link natural areas and contribute to habitat diversity. By reducing or eliminating those links, natural areas become isolated and more susceptible to stresses.

It is important for watershed residents to understand how the natural system works, and the role they play.

6.0 MANAGEMENT RECOMMENDATIONS

The Spencer Creek Watershed is composed of several natural components functioning together as a system. Each component is related to, and influences the other in some way.

The attributes of the watershed have been divided into 3 categories for the purpose of the study:

Water
Nature
Community

Each category includes a list of challenges, opportunities and management recommendations. Since natural systems are dynamic and interrelated, many of the recommendations may overlap.

A summary of the recommendations and targets can be found in Section 7.0 - Plan Implementation. The Subwatershed Summaries in Section 8.0 show how these recommendations are applied to the landscape.

6.1 WATER

6.1.1 CREEKS

The creeks and tributaries in the Spencer Creek watershed support a diverse natural system, and provide a route for water to make its way from the source areas in Puslinch, Ancaster and Flamborough to the mouth at Cootes Paradise. Along the way these watercourses form corridors that provide habitat for wildlife and connect the watershed. They are visually pleasing and many provide recreation opportunities for watershed residents.

Riparian, or creek, corridors vary in form and function throughout the watershed. Some may appear natural, having changed little over time. Others may have been altered by human activity or re-located altogether to underground pipes, long since forgotten.

A poorly managed watershed will show the stresses as changes in water quality, riparian vegetation, sediment levels and habitat loss. The number and variety of plants and animals living in a watercourse will provide a good indication of the health of lands it passes through.

By diverting watercourses and covering land with impervious surfaces like asphalt and concrete, the hydraulic characteristics of a watershed are altered. Instead of being allowed to naturally drain away or infiltrate through the soil, rainfall is quickly directed into the stormwater system, along a system of pipes and out to the receiving waterbody.

Development can also create large amounts of silt and sediment. When large parcels of land are developed, the topsoil is removed or stockpiled. Without any vegetation to protect against erosion, soil particles are blown off the site, or carried into the watercourse by surface run-off.

All of the watercourses in the Spencer Creek Watershed have been influenced by human activity in one form or another. Clearing native vegetation, agricultural activity and urban development have been the main factors degrading the Spencer Creek and its tributaries.

Vegetation Clearing

Most of the watershed has been cleared at one time or another. Lands in the north western portion of the watershed, north of Concession 7, support regenerating, natural communities, along with lands on the

FILL REGULATED AREAS
FILL REGULATION
WATERSHED BOUNDARY
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Niagara Escarpment, and in the Dundas Valley . In most cases, the watercourses flowing through these areas have good riparian cover.

Some sections of the watershed continue to be used in agricultural production, or have become part of the urban community. Generally the riparian corridor through these areas does not have an opportunity to naturally regenerate.

Agriculture

Agricultural activity is concentrated in the area north of Highway #5, and south of Concession 7. Also worth noting are the market gardens and nurseries along Highway 52, and Highway #8, near Christie Conservation Area.

Agricultural operations can have a huge influence on the watercourse, depending on the way they are managed. Water quality, quantity, wildlife habitat and the location of the watercourse itself can be affected by farming practices.

Soil particles washed into the watercourse from fields with little or no vegetative buffers can carry agricultural chemicals, bacteria and nutrients into the creek system.

In the last ten years there has been a shift toward using conservation farming practices to protect the environment and conserve soil. Conservation farming is a term used to describe management practices which reduce the impact of agriculture on the natural environment, and conserve topsoil. Stream buffers, minimum tillage and livestock fencing are but a few of the methods used to protect agricultural land and the watercourses flowing across it.

Urban Development

As towns and cities in the watershed developed and expanded, the creeks and tributaries were dramatically altered. To increase the area for construction, floodplain lands were filled. To protect against erosion, creek banks were hardened and streams channelized. In other locations, the watercourses were buried in a system of underground pipes. The Lower Sydenham and Spencer Creeks flow through artificial channels which do not support habitat and present barriers to the movement of fish and wildlife. There are approximately ten kilometres of channelized watercourses in the Spencer Creek watershed (HRCA, 1996). The majority of these projects were undertaken in the 1970s'

and early 1980s'. However some, such as the Borer's Creek channelization project, extended into the 1990s.

Conservation Authorities and municipalities have begun to look at methods to "naturalize" artificial channels. These include creating a naturally undulating low-flow channel that imitates a natural watercourse and replacing hardened banks with bio-engineered slopes.

Locally the City of Hamilton naturalized a portion of channel at the mouth of Chedoke Creek. Improved habitat and riparian cover distinguish this section of the watercourse from the rest of the hardened channel.

Development can also be a source of sediment in the Spencer watershed. During subdivision construction, topsoil is often stripped from an area and stockpiled. The bare earth is easily eroded by rainfall and surface runoff, then carried into the watercourse where it is transported downstream. In Ancaster, Dundas and Flamborough hectares of land have been cleared and graded in anticipation of development. The sediment and erosion control measures, required as conditions of subdivision approval, are only effective if properly maintained and inspected. Unfortunately sediment control fences and silt traps are often knocked down or overwhelmed by sediment resulting in large amounts of soil finding its way into the watercourse.

6.1.2 AQUATIC HABITAT

When people speak about aquatic habitat they are referring to the plants, animals, fish, insects and micro-organisms that make up the living system in a watercourse. As with any natural system, a healthy aquatic habitat is diverse and balanced.

A number of factors determine which species are present in a particular stretch of a watercourse. Water quality is often the major deciding factor for aquatic habitat. Good water quality supports a diverse and healthy aquatic habitat. Poor water quality may not be as productive, and may be more susceptible to stress.

Water quality includes such variables as turbidity, water temperature, dissolved oxygen and nutrients, among many others. Any one of these variables could prevent a species from surviving in an area. Some species, like carp, are able to survive in murky, turbid water, while trout require clear, cool water.

Activities in the watershed which affect any one of these variables affect aquatic habitat. Some of our land management practices should be examined to identify potential impacts. Water control structures along a watercourse can affect aquatic habitat in a variety of ways. The structure changes the hydraulic characteristics of the watercourse by disrupting flows. Water that sits in a reservoir tends to become warmer as the surface is heated by the sun, and the structure itself can present a barrier to fish migration.

Barriers to Migration

Barriers to fish migration are present throughout the watershed. Barriers can be physical, such as dams or weirs, but they can also be barriers caused by water quality. Fish and other aquatic organisms may require a variety of habitat types throughout their lifecycle. Spawning grounds, sheltered nursery areas and migration routes are all important components of aquatic habitat.

Riparian vegetation provides shade and shelter for some organisms. Aquatic habitat management is not confined to the water, or the creek banks. Because the watercourse is influenced by land management activities in the watershed, so too is aquatic habitat.

The first European Settlers found the Spencer Creek in a very different condition from the watershed we know today.

Settlers began clearing the native vegetation that appeared to stand in the way of agricultural prosperity. This changed the watershed and altered the groundwater regime. Early agricultural practices often changed the route of watercourses and compromised or eliminated stream buffers.

Today the Spencer Creek and its tributaries contain everything from cold water fisheries habitat to warm water baitfish environment. At the mouth of the watercourses, Cootes Paradise does not show the diverse and bountiful habitat of the late 1800s'. Instead the sediment laden waterbody is in need of restoration.

Restoration Projects

All is not gloomy for the aquatic ecosystem of the Spencer Creek Watershed. An active volunteer movement is working with private landowners and public agencies to restore riparian vegetation in the Fletcher Creek and improve aquatic habitat. Project Paradise,

administered by the Royal Botanical Gardens, has brought community focus to the plight of Cootes Paradise, and is working hard to rehabilitate habitat in this Provincially Significant Wetland. These projects can be used as models for other areas of the Spencer Creek Watershed, and other watersheds throughout North America.

Government agencies, who have long been responsible for managing fisheries resources, are adapting to changing times and working with, instead of for, the community. The lead agency for fisheries habitat is the Ontario Ministry of Natural Resources. Through a memorandum of understanding with the Federal Department of Fisheries and Oceans, the MNR assists by administering the fish habitat provisions of the Fisheries Act.

Development applications are currently reviewed for destruction of fish habitat. This helps to protect aquatic habitat in the vicinity of the development, but the long term, cumulative impact along the entire watercourse is not considered. Additional research and monitoring will help provide a better picture of the fisheries in the Spencer Creek watershed.

6.1.3 WATER QUALITY

Water quality is important to watershed residents. It affects landscape aesthetics, recreation potential and the livelihood of those who use surface water for irrigation or livestock production. Groundwater quality is more difficult to monitor. We only see groundwater where it comes to the surface at springs or wells.

The groundwater in the upper portion of the Spencer Creek Watershed has been studied extensively. The Township of Puslinch developed a groundwater monitoring program, with monitoring wells located throughout the area. Groundwater in the Hamilton-Wentworth Region has not been investigated as thoroughly. Some groundwater mapping was undertaken using well records, however quality and quantity data are lacking.

Public Safety

Watershed residents depend on safe water quality to sustain life and protect against disease. Most of the residents in the watershed are on a municipal water supply with a source located outside the watershed. Water is drawn from Lake Ontario then treated and piped to households in the urban areas throughout the watershed. Unfortunately this

distances residents from their water source, making it more difficult to show a direct relationship between watershed management and water quality.

A smaller percentage of watershed residents rely on groundwater for their household. Well water quality is affected by land management and activities in recharge areas. Potential sources of groundwater contamination can be natural, such as high sulphur levels in the groundwater in some areas of the Dundas Valley. Other contaminants like chemicals or bacteria may be caused by poorly managed agricultural operations, or private septic systems.

Water Sampling

Water sampling can be a costly endeavour. Collecting samples, transporting and expensive laboratory analysis quickly add-up. Recent approaches to water quality monitoring have branched into more practical, community based methods of sampling. These methods involve examining benthic organisms, that live in the watercourses. Their presence or absence can provide valuable information about water quality. This type of monitoring does not require the same laboratory testing, and can help identify the presence of aquatic habitat.

Water quality guidelines are in place for effluent discharge, however they are administered on a site by site basis, rather than budgeting for the entire watershed. The cumulative impacts of all discharges are not always considered in the equation. Water quality should be judged on the ability to support a healthy, diverse ecosystem.

In spite of the research, detrimental land management practices and uncontrolled development continue to impact water quality in the Spencer Creek Watershed.

Waste Disposal

Other factors affecting water quality are related to the way we dispose of our waste. Below the urban streets, a network of sewer pipes transport municipal waste from our households to treatment centres. A complicated and convenient system like this requires safeguards in case of problems in the network. Historically these safeguards were overflow pipes that re-directed waste from the sewer system into creeks and streams during emergencies, such as power failures or exceeded

capacity. Overflow pipes continue to discharge waste into watercourses during heavy storms or emergencies, although the Region is taking steps to minimize these events.

In the City of Hamilton this overflow problem is aggravated because the storm sewers were combined with the sanitary sewers, a common practice when the original system was built. This resulted in frequent overflows and poor water quality in receiving watercourses. In 1991 the Region of Hamilton-Wentworth completed a Pollution Control Plan for the City of Hamilton. The plan examined 22 major combined sewer overflow outfalls and reviewed a number of options from the costly reconstruction of separate stormwater and sanitary systems to the "do nothing approach". The preferred plan involved constructing large tanks to store the overflow during storm events or emergencies when the treatment plant can not keep up with the flow. On average, the overflow is composed of 7 percent sanitary sewage and 93 percent stormwater sewage. When conditions in the system return to normal the waste is pumped back into the sewer, and on to the treatment plant.

There are sanitary sewage overflows in Dundas and Ancaster as well. These are not combined systems, so overflow events are not as frequent, however as the existing system nears capacity, there is a greater potential for overflows. The Region of Hamilton-Wentworth is developing a plan for the Dundas and Waterdown sewage treatment plants to ensure that they can meet the demand for capacity reaching the year 2020.

Challenges and Opportunities

- Continued manipulation of watercourses in the Spencer Creek may increase flood and erosion potential, threatening life and property.

- Channelization and piping remove habitat, degrade water quality and present barriers to the movement of wildlife.

- Channelization and piping projects alter our perspective of a watercourse by changing the natural system into a part of the infrastructure.

- Continued encroachments into creek systems will reduce riparian vegetation and impact the function of the corridor.

- The impact of poor land stewardship is continuing to degrade aquatic habitat in some portions of the watershed.

- We do not understand the cumulative impact of all ponds, reservoirs, dams, and water consumption on aquatic habitat or base flow.

- Some riparian corridors in steep ravines are protected by the Conservation Authority's Fill, Construction and Alteration to Waterways Regulation.

- Groundwater recharge areas are not identified in municipal planning documents or protected by statute.

- Volunteer groups are having great success with habitat restoration projects in the upper Fletcher Creek.

- Resource management agencies must make more effort to coordinate work with municipalities, community groups and organizations.

- There is a lack of watershed wide data on surface and groundwater quality.

- There is a need for coordination among a number of agencies involved in water quality issues.

- Development sites and agricultural fields continue to be sources of sediment loading.

- Erosion and Sediment Control Guidelines developed as a project of the Hamilton Harbour Remedial Action Plan are not being enforced by local municipalities during development.

- The Hamilton Harbour Land Stewardship Program is promoting understanding and awareness of wise land management among rural landowners.

- The total sediment contribution from natural erosion is unknown, and may be very large below the Escarpment..

- Three Existing Combined Sewer Overflows continue to discharge untreated waste into watercourses during heavy storm events and emergencies.

- At the projected rate of growth the Dundas sewage treatment plant will be approaching its design capacity by approximately 2003.

MANAGEMENT RECOMMENDATIONS FOR WATER

1. Ensure that all lands located within flood or erosion hazard zones are identified and zoned accordingly.

2. Enforce erosion and sediment control measures in the field.

3. Develop topsoil preservation bylaws and tree cutting bylaws to protect vegetation and reduce soil erosion.

4. Encourage restoration of existing channelized watercourses using bioengineering techniques and natural channel design principles.

5. Undertake bio-engineering projects to mitigate erosion sites impacting downstream aquatic habitat.

6. Prevent future piping and channelization of watercourses.

7. Identify, protect and enhance existing stream corridors.

8. Work to identify, protect and enhance existing wetland resources.

9. Remove barriers to movement along stream corridors.

10. Map fisheries information throughout the entire watershed to identify areas at greatest risk and areas for habitat enhancement.

11. Review water control structures on public lands and retrofit, or remove as determined feasible.

12. Encourage watershed residents to examine water control structures on private lands, and make changes where necessary to improve aquatic habitat.

13. Develop a watershed-wide, water quality monitoring program in cooperation with all parties involved in water quality.

14. Monitor erosion station and identify priority sites for bio-engineering demonstration project.

15. Work toward a groundwater monitoring program for the Hamilton Harbour Watershed.

15. Investigate water taking permit process with the MOEE.

17. Restore native habitat along creek corridors.

6.2 NATURE

6.2.1 TERRESTRIAL HABITAT

Terrestrial habitat is not confined to watershed boundaries. Vegetative communities can cover large or small areas, crossing over several watersheds. Since upland wildlife does not depend on watercourses for transportation, watersheds are not necessarily the best management unit for terrestrial habitat. On the other hand, terrestrial habitat plays a large role in watershed management.

Vegetation serves an important function in the hydrologic cycle of a watershed. Land that is covered in vegetation is protected from surface erosion . Vegetation also helps the land to delay stormwater run-off by improving infiltration and groundwater recharge.

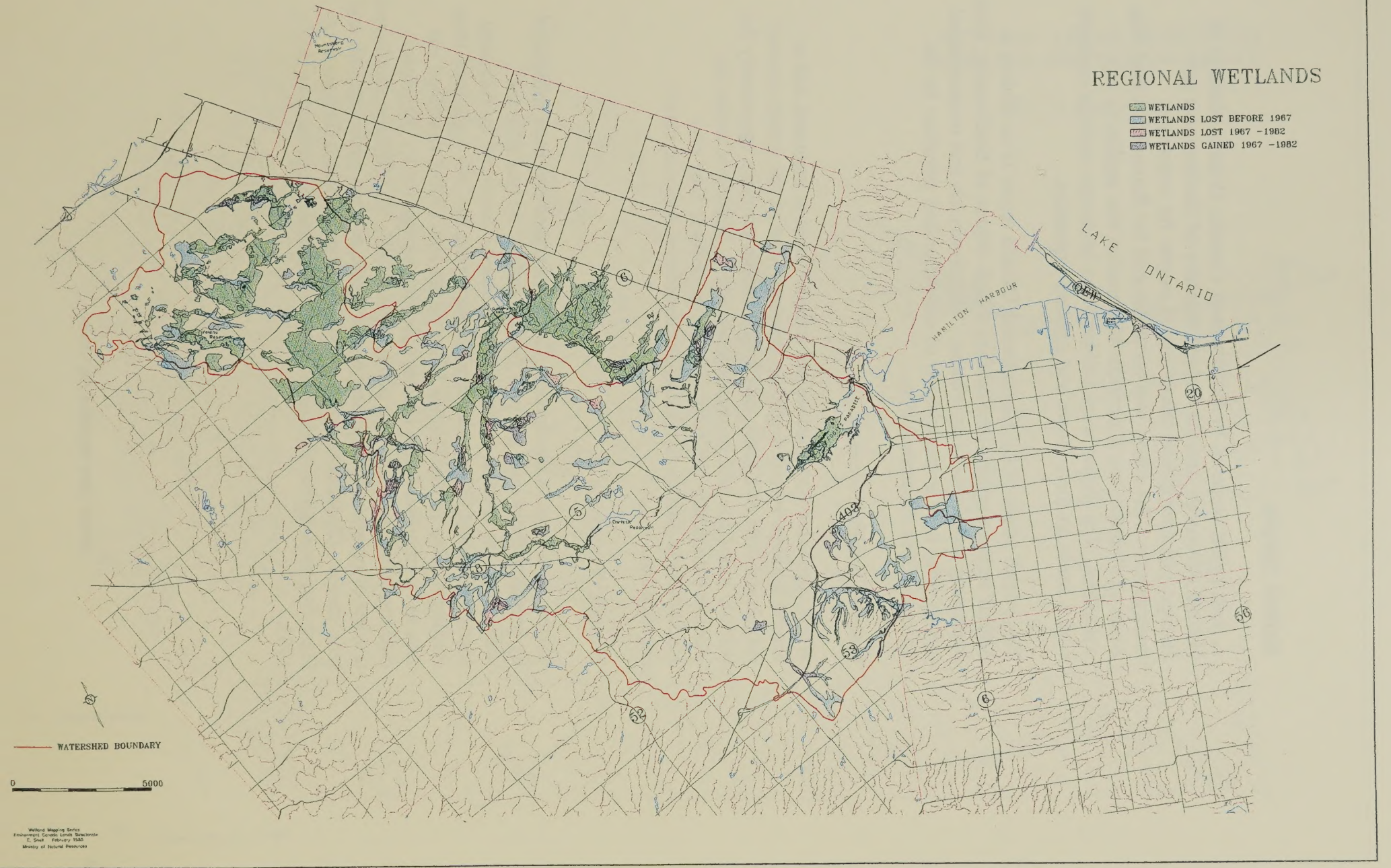
Riparian vegetation along watercourses helps to shade the water, keeping it cool and providing breeding conditions for many aquatic species.

Wetlands

The majority of the existing wetlands in the watershed are located above the Niagara Escarpment, in the Town of Flamborough. Coote's Paradise is the only Provincially Significant Wetland below the Escarpment.

Wetlands serve a number of important functions in the watershed. They help slow run-off, maintain base flow and provide wildlife habitat. When wetlands are destroyed the hydraulic and habitat characteristics of the watershed are changed. Virtually all of the wetlands in Ancaster and Hamilton were cleared and drained for farming or development prior to 1967 (Snell 1985 - Environment Canada Lands Directorate). The remaining wetland pockets support small populations of wildlife, but do not play a significant role in maintaining base flow.

A healthy vegetative community will support a diverse and healthy wildlife population. The size and location of a vegetative community will determine the species it can support. Some animals, like raccoons and deer can tolerate reasonable levels of human disturbance. Others, like the Red Shouldered Hawk, require a large dense woodlot for nesting. Many bird species will nest 200 metres or more away from a forest edge, to protect against predators.


REGIONAL WETLANDS
WETLANDS
WETLANDS LOST BEFORE 1967
WETLANDS LOST 1967 -1982
WETLANDS GAINED 1967 -1982
LAKE ONTARIO
HAMILTON HARBOUR
WATERSHED BOUNDARY
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Wetland Mapping Series
Environment Canada Lands Directorate
E. Snell February 1985
Ministry of Natural Resources

Habitat Targets

A draft report prepared by Environment Canada, Ontario Ministry of Natural Resources, and the Ontario Ministry of Environment and Energy, proposes habitat rehabilitation targets for watershed management. The report was commissioned for Remedial Action Plan - Areas of Concern, but it provides information that applies to any watershed. The targets were derived from landscape ecology concepts with a stress on forest cover and riparian vegetation.

The overall target of the Environment Canada report is to achieve a natural heritage system that exhibits a high degree of biodiversity, while improving water quality in streams. The thresholds and recommended targets were used in the analysis of sub-watershed priorities for the Spencer Creek Watershed Plan.

Natural Heritage System

When vegetative communities are linked habitat is increased and a natural heritage system begins to develop. Just as the streets connect neighbourhoods of a town, this linked habitat provides opportunity for wildlife migration and increases biodiversity, helping to make the wildlife community healthier. Linked greenlands may also accommodate human activities like recreational trails or nature appreciation.

Historic Vegetation

Terrestrial habitat in the Spencer Creek watershed has been influenced by human activity over the past two centuries. At one time the watershed was covered in dense native forest. Accounts by Augustus Jones and Lewis Grant, who worked surveying the line for a road from Burlington Bay to the Thames River in the late 1700s', described the area as "a primeval forest almost unbroken except for an occasional meadow along a stream or a patch of windfall". In 1793 the south-west portion of present day Ancaster was a "plain or open park with oak and pine stands. (Spencer Creek Conservation Report, 1960) Remnants of these forgotten prairie communities were discovered in Ancaster in 1993.

NATURAL AREAS INVENTORY
HAMILTON–WENTWORTH REGION
NAI AREAS
WATERSHED BOUNDARY
A. Heagy 1993
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Only the most severe topography managed to shelter the native vegetation. Lands that were too wet to farm or too steep to cut trees, contain a few original plant communities. It is possible to find traces of native stands in the Beverly Swamp, or the steep ravines and gorges along the Niagara Escarpment.

The habitat today is a mere shadow of what it once was. Public agencies own a number of parks and natural areas throughout the watershed.

Urbanization and land management activities place additional stresses on the remaining natural areas. Competition by non-native species, household pets, and pollution are only a few of the stresses acting on the remaining natural areas in the Spencer Creek watershed.

Some of the impacts caused by humans are accidental. Conifer plantations, intended to increase forest cover, have grown into large monoculture woodlots, providing little natural habitat. Another example of unintentional stress is the impact of recreation pursuits on natural areas. A growing urban population in the region is placing increasing stress on parks and open space. Their appreciation for the landscape and desire for access is threatening its existence.

CHALLENGES AND OPPORTUNITIES

- Terrestrial habitat, including rare and significant habitat in the watershed, is being threatened by human activity.
- Competition with non-native species is threatening some indigenous vegetation and wildlife.
- Some well defined corridors along valley systems and the Niagara Escarpment link significant open spaces.
- Increased public demand for recreation opportunities is placing additional stress on natural areas.
- The Spencer Creek Watershed has a good natural heritage database already completed.
- The Regional Official Plan contains strong policy recommendations, based on ecosystem planning.

- Some Environmentally Significant Areas are protected by Public ownership.

MANAGEMENT RECOMMENDATIONS FOR NATURE

18. Request local municipalities to identify core natural areas and links in planning documents and zone accordingly.

19. Improve interior forest cover, where appropriate, by infilling areas within or adjacent to existing forested areas.

20. Protect and enhance natural corridors through parks and publicly owned open space.

21. Coordinate resource management agencies and community groups to help establish priorities for land acquisition.

22. Contribute toward research and updating the Natural Heritage Inventory.

23. Ensure that native landscape design principles and plants are used in any development near an Environmentally Significant Area or greenway corridor.

24. Continue support of existing stewardship program, and enhance public/awareness initiatives.

6.3 COMMUNITY

6.3.1 GROWTH AND INFRASTRUCTURE

Human activity is mentioned throughout the watershed plan because it had a major influence on the shape of the watershed we see today.

Growth can be increased development, urban expansion, or any activity which changes land use. Infrastructure is a broad term for the utilities and services which allow us to travel, communicate and live in comfort.

We often consider growth to be a negative thing. The traditional view has always been associated with increased size and development. A community was not growing unless it was expanding to cover new areas with more buildings. The suburbs of post-war North America came to symbolize growth and prosperity.

Urban expansion comes with a high cost. Large areas of land are consumed by linear development and subdivisions. Sprawling development requires additional, expensive infrastructure with long term maintenance requirements. Expanding suburbs often leave a neglected downtown area. As business and commerce move out to the "growth" areas, the older areas of the city become vacant.

Growth does not have to be negative. With new subdivision land in short supply, municipalities are looking at redevelopment of older downtown areas. Re-development of former industrial sites and intensification of urban areas helps to reduce the demand for new land and reduce the stress on infrastructure facilities.

Urban Growth

In the Spencer Creek Watershed, urban expansion is focused in four main areas:

Waterdown
West Dundas - along Governor's Road
Meadowlands (Ancaster)
Garner Neighbourhood (Ancaster)

The developments in these areas began in the late 1980s and early 1990's, when housing markets were active. In most cases the entire subdivision is stripped of topsoil, then graded and left alone until it is time to begin construction. In 1996, home construction became more

active and these neglected landscapes were being developed and revegetated as homes were constructed.

Planning our Communities

Regional and local Official Plans are the documents that define urban boundaries and development limits. Other types of development, not associated with housing, can also have a significant impact on the landscape. For example, golf courses and campgrounds involve grading, vegetation removal, road construction and servicing. The development and long term management of these facilities must be approached with due consideration for their influence on the watershed.

Some natural features are located within existing urban area boundaries, scheduled for future development. Although most of the planning decisions regarding urban area boundaries have been made, there are specific design considerations that can be addressed through subdivision and site planning processes when design and servicing decisions are made.

Street layouts should respect the existing topography in order to reduce the amount of grading. Hedgerows and wooded areas should be protected by pro-active planning and design.

Subwatershed Plans

Currently each development is considered as a separate application, which makes it difficult to implement a coordinated approach to stormwater management, wildlife corridor protection or valley system management. An intermediate step, a subwatershed plan, would help to manage future development with a sensitive approach to the ecosystem.

Utilities

Utility plans also tend to neglect natural systems. Utility corridors are usually linear systems, designed to transport and distribute services. Most notable are hydro transmission corridors, pipelines and telephone.

Road and highway maintenance involves the use of many chemicals and processes which can impact the surrounding watershed, if care is not exercised. In the winter, salt and sand are used to keep roads clear of ice and safe for motorists. When works departments remove snow and clear the streets, the snow, ice and salt are dumped in areas and allowed to melt. The runoff from these snow-dumps carries a high quantity of

salt and other substances from the roads, often "shocking" the creek with a high concentration of salt.

The Ministry of Environment and Energy has developed guidelines for snow dumps to reduce the impact to watercourses and help protect aquatic environments. Unfortunately these guidelines are not enforced and the problem persists in many locations throughout Ontario.

The majority of the habitat disturbance associated with utility corridors occurs during construction and maintenance. Pipelines and hydro transmission corridors require specialized maintenance to ensure safe, efficient operation of the utility. There is some flexibility within those operating standards to reduce the level of maintenance and improve habitat.

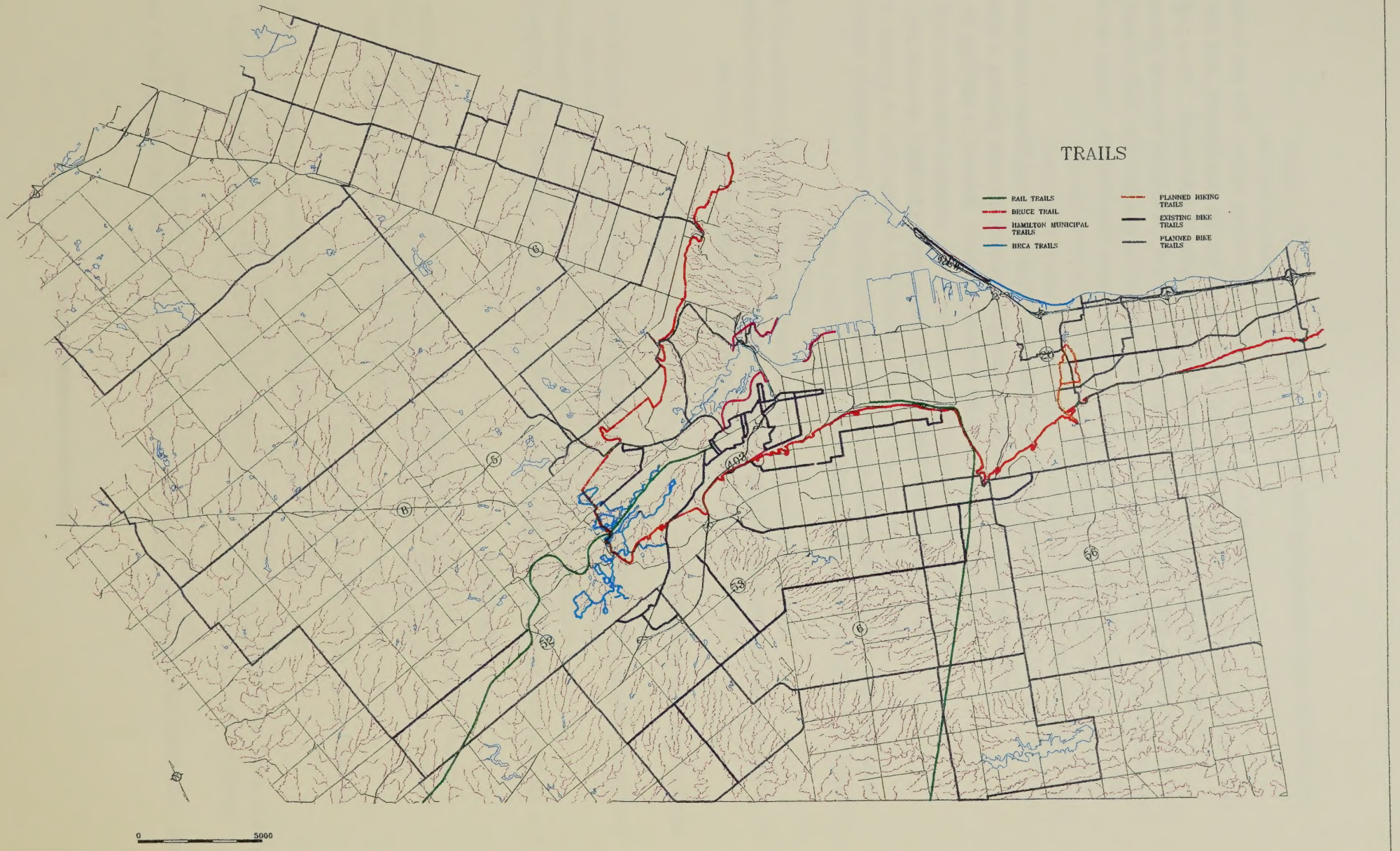
Ontario Hydro has been working with the Conservation Authority and other landowners in the Dundas Valley to minimize tree cutting and opt for selective vegetation removal. This results in a healthier habitat and improves opportunities for wildlife migration along transmission corridors.

6.3.2 CULTURE AND RECREATION

As humans we tend to focus on the environment as something that supports wildlife, agriculture and resource needs. Because of a long history working the land and settling on it, we consider the environment as something to serve us, something that we are separated from, when in actual fact, we are part of the environment.

Not only do open space systems benefit wildlife, they also benefit the humans that live in the watershed. Parks and open space are aesthetically pleasing, provide opportunities for recreation and improve the quality of life for watershed residents.

Recreation can vary from passive pursuits like bird watching and walking to active recreation such as soccer and mountainbike riding. Active recreation generally involves facilities like playing fields or arenas, while passive recreation requires less expensive facilities, or no facilities at all.


TRAILS
RAIL TRAILS
BRUCE TRAIL
HAMILTON MUNICIPAL TRAILS
HRCA TRAILS
PLANNED HIKING TRAILS
EXISTING BIKE TRAILS
PLANNED BIKE TRAILS
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Changing Needs

The population in North America is growing older. We are living longer through the benefits of a good health care system, and our community services must change to meet the demands. As a population gets older their recreation needs change. The baby-boomer generation is making less use of arenas and sporting fields. The shift toward a less programmed form of recreation changes the demands placed on the local municipalities.

Bird watching and hiking are the fastest growing leisure time pursuits. Arena facilities are still required, but these are now playing a smaller role overall in community recreation plans. Interest is shifting to multi-use recreation centres that combine youth oriented recreation with swimming pools, libraries and seniors centres. Trail systems are being developed more and more to service the community. A system of connecting trails through the watershed will be increasingly important to the watershed residents.

Increased awareness and understanding of the natural systems of the watershed will help residents understand the close connection between their actions and the quality of the environment they live in.

Culture

In addition to changing recreational activities, an older population will have more time for cultural pursuits. The cultural fabric of our watershed is based on its history and ethnic make-up. Understanding the history will help to put the present day watershed into perspective.

Parkland

Some municipalities have recognized the shift away from intensive recreation and are actively acquiring natural areas for parks. Local municipalities are also developing trail plans with assistance from residents and user groups.

The Region of Hamilton-Wentworth completed a commuter bicycle network study in 1992. The plan identifies a network of bicycle routes throughout the watershed, primarily aimed at the utilitarian cyclist.

The Spencer Creek watershed has a good supply of parkland. Approximately 12 percent of the area is owned or managed by a public

agency. These areas range from multi-function recreation facilities to protected natural areas.

Based on public consultation, watershed residents believe that cultural resources are not being promoted enough. The Spencer Creek Watershed has an interesting history beginning with indigenous people living along ancient waterbodies, moving to European exploration and settlement, developing into the communities we see today. The land use and stewardship practices of the past are the activities that have resulted in watershed of today. Understanding past activities and their impacts will help watershed residents make management and lifestyle decisions in keeping with a healthy, sustainable watershed.

CHALLENGES AND OPPORTUNITIES

- There are some natural features located within existing urban areas, such as the Tiffany Creek Headwaters ESA, that require protection.
- There is no mechanism in place to assess cumulative impacts of development proposals.
- Expanding infrastructure places more stress on existing facilities.
- Infrastructure maintenance will be required to ensure the system is operating at peak efficiency.
- Utility corridors negatively impact a number of natural areas and green corridors.
- There are greater stresses being placed on natural areas as a result of an aging population and resulting growth in outdoor recreation activities.
- Trail systems in the watershed do not provide many links to parks and open space in rural areas.
- The Regional Bicycle Network provides a good base from which to build local trail systems to improve access to natural areas.
- Cultural attributes of the watershed require greater protection and promotion.

- Aesthetic value of landscapes are not factored into all land use decisions (eg. scenic views / vistas / scenic roads / trails).

- More environmental education is required for the general public.

MANAGEMENT RECOMMENDATIONS FOR COMMUNITY

25. Request that municipalities endorse subwatershed planning as a required step in assessing cumulative impact for major development.

26. Ensure safe and efficient operation of infrastructure.

27. Reduce demand for new or expanded infrastructure.

28. Work with municipalities to ensure ecologically sensitive stormwater management plans are implemented for all new development.

29. Work with road and highway maintenance departments to implement snow dump guidelines.

30. Work with utility companies to naturalize utility corridors and encourage multi-use.

31. Encourage municipalities and trail managers to coordinate trail plans that improve access between urban centres and provide links to parks and rural areas.

32. Support planning for alternative modes of transportation.

33. Conduct an accessibility audit on Conservation Authority properties and make changes, where feasible, to improve access.

34. Encourage municipalities to adopt policies to protect culturally significant structures and landscapes.

35. Develop a cultural interpretation plan for Conservation Authority properties.

7.0 SUBWATERSHED SUMMARIES

The Spencer Creek watershed is composed of 15 subwatersheds, each with unique characteristics. The following subwatershed summaries provide specific information on catchment areas, and the variety of ecosystem stresses.

The source for the subwatershed land use and impervious area calculations is Spencer Creek Watershed Hydrology Study, prepared by MacLaren Plansearch (January 1990).

Watershed planning priorities are based on:

- proposed development
- increase in impervious area
- threat to natural areas
- contribution to ecosystem health

SUB-WATERSHEDS
LEGEND
ANCASTER CRK
UPPER SPENCER CRK
MID SPENCER CRK
W. SPENCER CRK
TIFFANY CRK
BORERS CRK
SULPHUR CRK
SYDENHAM CRK
SPRING CRK
CHEDOKE CRK
FLAMBOROUGH CRK
LOGIES CRK
WESTOVER CRK
LOWER SPENCER CRK
FLETCHER CRK
LAKE ONTARIO
HAMILTON HARBOUR
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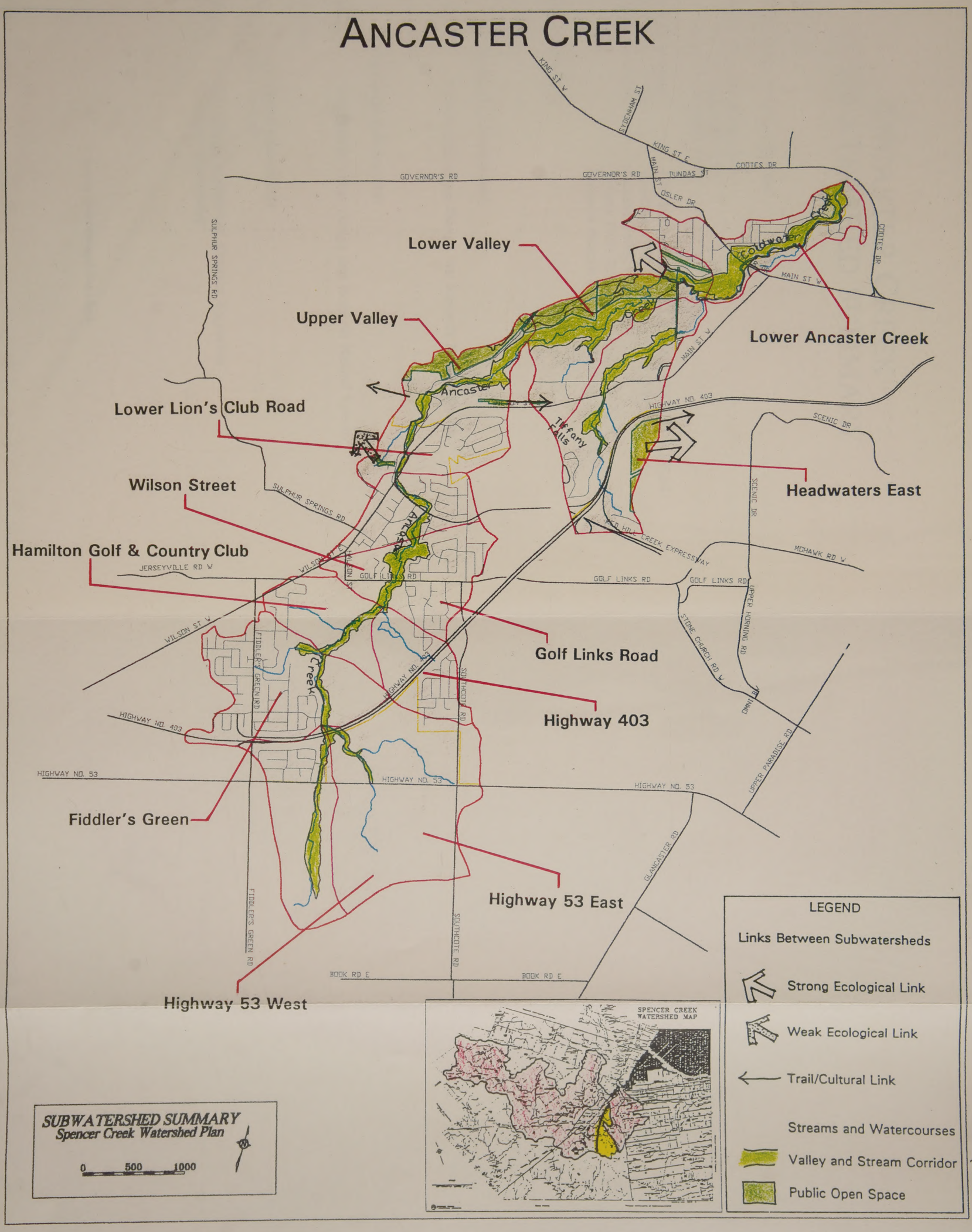
Hamilton Region Conservation Authority

ANCASTER CREEK



ANCASTER CREEK SUBWATERSHED SUMMARY

AREA: 1395.8 ha

MUNICIPALITIES: Ancaster, Dundas

LAND USE: Urban/Residential 56%
Natural Area/ESA 26%
Agriculture/Rural 18%

IMPERVIOUS AREA:
Present Conditions 13.8%
Future Conditions 18.1%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Hamilton Golf & Country Club (ESA#40)
Dundas Valley (ESA#41)
Tiffany Falls (ESA#44)
Iroquoia Heights Conservation Area (ESA#45)

CATCHMENT AREAS

Highway 53 East

Stresses:
- Residential Development

Opportunities:
- Encourage Urban Design that Respects Natural System

Highway 53 West

Stresses:
- Residential Development

Opportunities:
- Encourage Urban Design that Respects Natural System

Fiddler's Green

Stresses:
- Golf Course Maintenance
- Urban Run-off

Opportunities:
- Encourage Buffers and Riparian Vegetation
- Promote Stewardship

Hamilton Golf & Country Club

Stresses:
- ■ Golf Course Maintenance

Opportunities:
- □ Encourage Buffers and Riparian Vegetation along Watercourse
- □ Promote Stewardship

Highway 403

Stresses:
- ■ Golf Course Maintenance

Opportunities:
- □ Encourage Buffers and Riparian Vegetation along Watercourse
- □ Promote Stewardship

Golf Links Road

Stresses:
- ■ Golf Course Maintenance
- ■ Urban Run-off

Opportunities:
- □ Encourage Buffers and Riparian Vegetation along Watercourse
- □ Promote Stewardship
- □ Promote Water Conservation

Wilson Street

Stresses:
- ■ Residential Encroachment into Natural Areas
- ■ Urban Run-off

Opportunities:
- □ Promote Stewardship
- □ Promote Water Conservation

Lower Lion's Club Road

Stresses:
- ■ Residential Encroachment into Natural Areas
- ■ Erosion

Opportunities:
- □ Promote Stewardship
- □ Bio-Engineering Projects to Reduce Erosion

Upper Valley

Stresses:
- ■ Erosion

Opportunities:
- □ Bio-Engineering Projects to Reduce Erosion

Headwaters East

Stresses:
- Erosion
- Residential Encroachment into Natural Areas
- Urban Run-off

Opportunities:
- Bio-Engineering Projects to Reduce Erosion
- Promote Stewardship
- Promote Water Conservation

Lower Valley

Stresses:
- Urban Run-off
- Erosion

Opportunities:
- Promote Water Conservation
- Bio-Engineering Projects to Reduce Erosion

Lower Ancaster Creek

Stresses:
- Erosion
- Urban Run-off

Opportunities:
- Bio-Engineering Projects to Reduce Erosion
- Promote Water Conservation

SUBWATERSHED PLANNING PRIORITY: medium

BORER'S CREEK
Parkside
Centre Street
Highway #6
Highway #5
Borer's Falls
Lower Borer's Creek
York Road
CONCESSION 6 E
CONCESSION 5 W
CONCESSION 5 E
HIGHWAY NO. 6
MILLGROVE SIDE RD
CENTRE RD
PARKSIDE DR
MAIN ST N
MILL ST S
MAIN ST S
THOMSON DR
HIGHWAY NO. 5
ROCK CHAPEL RD
SYDENHAM RD
PATTERSON RD
OLD GUELPH RD
YORK RD
FALLSVIEW RD E
KING ST W
KING ST E
DUNDAS ST
COOTES DR
OLYMPIC DR
YORK BV
SPENCER CREEK WATERSHED MAP
SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan
0 500 1000
LEGEND
Links Between Subwatersheds
Strong Ecological Link
Weak Ecological Link
Trail/Cultural Link
Streams and Watercourses
Valley and Stream Corridor
Public Open Space

BORER'S CREEK SUBWATERSHED SUMMARY

AREA: 2019.9 ha

MUNICIPALITIES: Flamborough, Dundas

LAND USE: Agriculture/Rural 69%
Natural Area/ESA 18%
Urban/Residential 13%

IMPERVIOUS AREA:
Present Conditions 4.9%
Future Conditions 21.7%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Waterdown North Wetlands (ESA#8)
Millgrove South Woodlot (ESA#12)
Borer's Falls - Rockchapel (ESA#43)

CATCHMENT AREAS

Parkside

Stresses:
- Urban Expansion
- Potential Loss of Fish Habitat

Opportunities:
- Detailed Fisheries Study
- Subwatershed Study
- Examine Area for Possible ESA Criteria

Centre Street

Stresses:
- Residential Development
- Urban Run-off
- Channelization

Opportunities:
- Promote Residential Development That Respects Natural System
- Promote Water Conservation
- Channel Naturalization Projects
- Increase Riparian Vegetation

Highway #6

Stresses:
- Channelization
- Irrigation

Opportunities:
- Channel Naturalization
- Increase Riparian Vegetation
- Review Water Taking Permit Process

Highway #5

Stresses:
- Poor Agricultural Practices
- Golf Course Management

Opportunities:
- Promote Stewardship
- Establish Buffer Along Watercourse
- Increase Riparian Vegetation
- Acquisition of Stream Corridor to Link Public Holdings

Borer's Falls

Stresses:
- Residential Encroachment into Natural Areas
- Erosion

Opportunities:
- Promote Stewardship
- Bio-Engineering Projects to Reduce Erosion

York Road

Stresses:
- Urban Run-off
- Erosion

Opportunities:
- Promote Water Conservation
- Bio-Engineering Projects to Reduce Erosion

Lower Borer's Creek

Stresses:
- Erosion
- Residential Encroachment into Natural Areas

Opportunities:
- Bio-Engineering Projects to Reduce Erosion
- Promote Stewardship

SUBWATERSHED PLANNING PRIORITY: high

CHEDOKE CREEK

LEGEND

Links Between Subwatersheds

Strong Ecological Link

Weak Ecological Link

Trail/Cultural Link

Streams and Watercourses

Valley and Stream Corridor

Public Open Space

SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan

0 500 1000

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CHEDOKE CREEK SUBWATERSHED SUMMARY

AREA: 2721.8 ha

MUNICIPALITIES: Hamilton, Ancaster

LAND USE: Urban/Residential 88%
Natural Area/ESA 12%

IMPERVIOUS AREA:
Present Conditions 37.6%
Future Conditions 38.3%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Hamilton Escarpment (ESA#47)
Iroquoia Heights Conservation Area (ESA#45)

CATCHMENT AREAS

Garth Street

Stresses:
- Urban Run-off
- Impervious Surface

Opportunities:
- Promote Water Conservation

Upper Paradise

Stresses:
- Urban Run-off
- Impervious Surface
- Golf Course Management

Opportunities:
- Promote Water Conservation
- Increase Riparian Vegetation
- Promote Stewardship on Public Lands

Iroquoia Heights

Stresses:
- Residential Development
- Urban Run-off

Opportunities:
- Encourage Development That Respects Natural System
- Promote Water Conservation

Aberdeen Ave

Stresses:
- Urban Run-off
- Impervious Surfaces
- Transportation Links Along Escarpment

Opportunities:
- Promote Water Conservation

Chedoke Sports Park

Stresses:
- Urban Run-off
- Golf Course Management
- Rail Yard Property
- Channelization

Opportunities:
- Promote Water Conservation
- Increase Riparian Vegetation
- Promote Stewardship
- Detailed Water Quality Study
- Channel Naturalization

Main West

Stresses:
- Urban Run-off
- Residential Encroachment into Natural Areas
- Impervious Surfaces

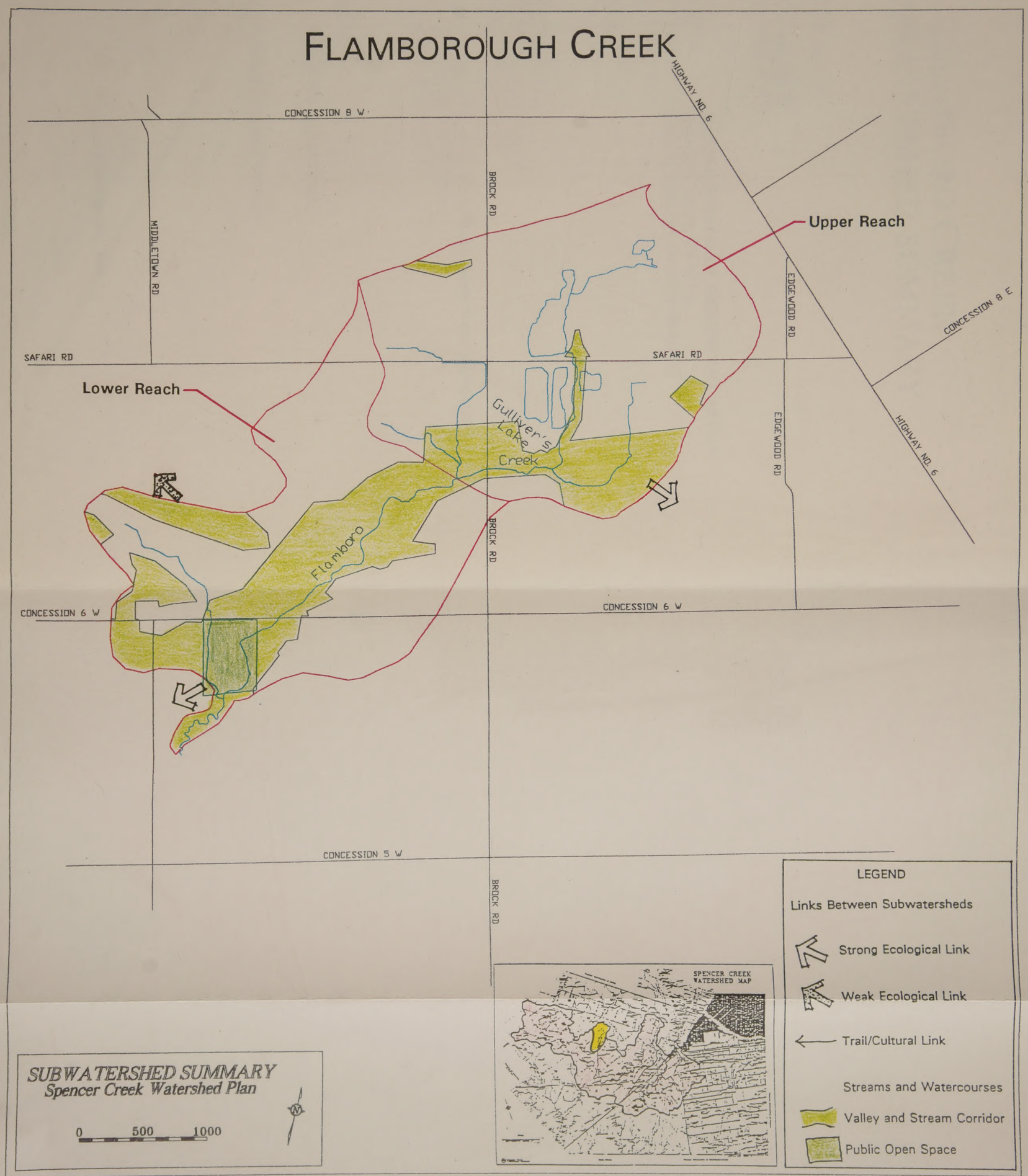
Opportunities:
- Promote Water Conservation
- Promote Stewardship

Westdale

Stresses:
- Urban Run-off
- Residential Encroachment into Natural Areas
- Impervious Surfaces

Opportunities:
- Promote Water Conservation
- Promote Stewardship

SUBWATERSHED PLANNING PRIORITY: medium


FLAMBOROUGH CREEK
CONCESSION 8 W
HIGHWAY NO. 6
MIDDLETOWN RD
BROCK RD
Upper Reach
EDGEWOOD RD
CONCESSION 8 E
SAFARI RD
SAFARI RD
Lower Reach
Gulliver's Lake Creek
Flamboro Creek
EDGEWOOD RD
HIGHWAY NO. 6
BROCK RD
CONCESSION 6 W
CONCESSION 6 W
CONCESSION 5 W
BROCK RD
SPENCER CREEK WATERSHED MAP
LEGEND
Links Between Subwatersheds
Strong Ecological Link
Weak Ecological Link
Trail/Cultural Link
Streams and Watercourses
Valley and Stream Corridor
Public Open Space
SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan
0
500
1000
N

FLAMBORO CREEK SUBWATERSHED SUMMARY

AREA: 1209.4 ha

MUNICIPALITIES: Flamborough

LAND USE: Agriculture/Rural 80%
Natural Area/ESA 20%

IMPERVIOUS AREA:
Present Conditions 0.2%
Future Conditions 0.2%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Hayesland Swamp (ESA#13)
Strabane Southwest Drumlins (ESA#26)

CATCHMENT AREAS

Upper Reach

Stresses:
- Recreation Use
- Development (condominium)
- Private Sewage Treatment

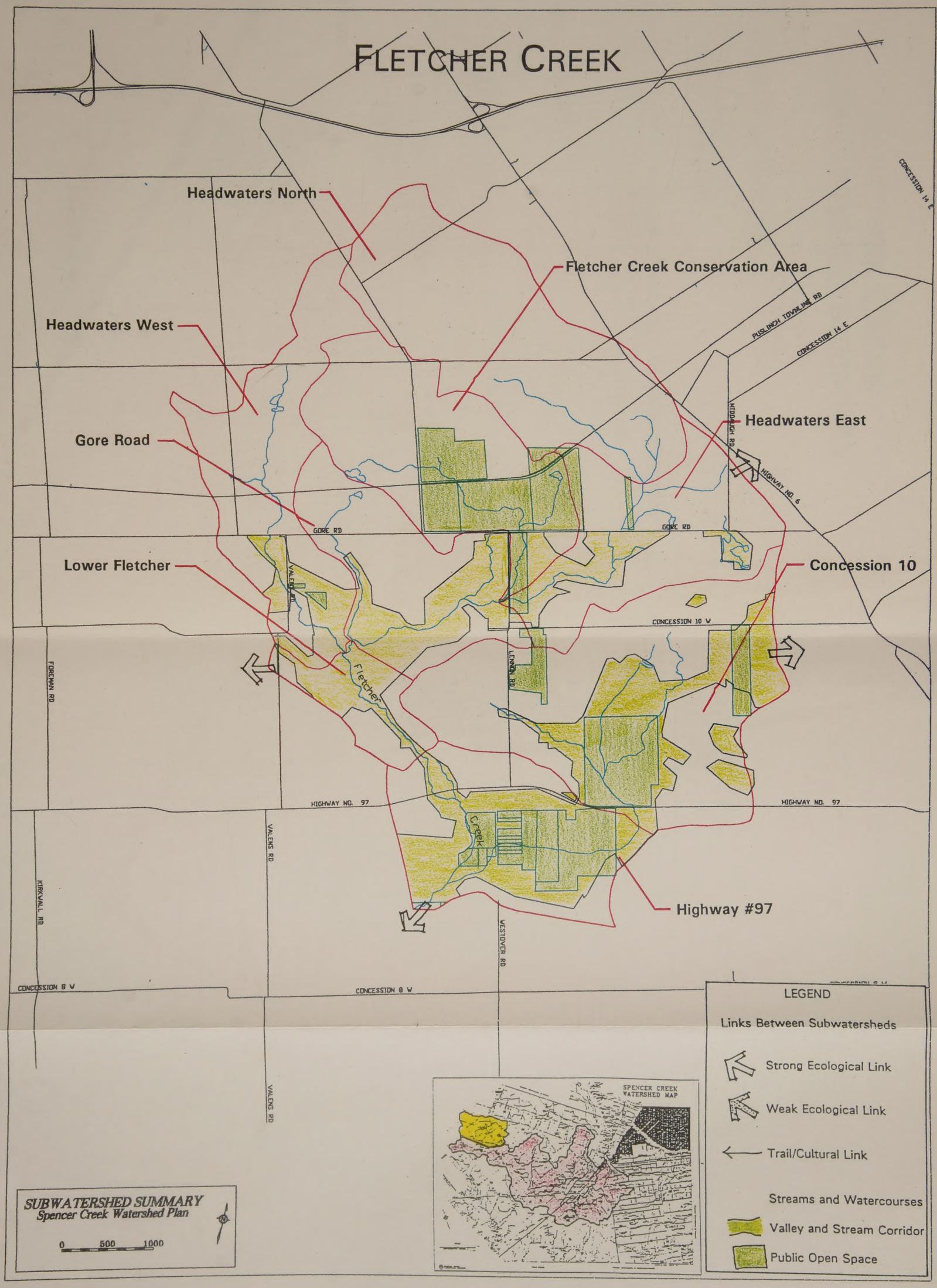
Opportunities:
- Potential Cold Water Fish Habitat (lower water temperature)
- Fish Habitat Rehabilitation
- Study Water Quality

Lower Reach

Stresses: Few stresses

Opportunities:
- Fish Habitat Rehabilitation

SUBWATERSHED PLANNING PRIORITY: low


FLETCHER CREEK
Headwaters North
Fletcher Creek Conservation Area
Headwaters West
Headwaters East
Gore Road
Lower Fletcher
Concession 10
Highway #97
GORE RD
CONCESSION 10 W
HIGHWAY NO. 97
CONCESSION 8 W
VALENS RD
FORDMAN RD
KIRKVALL RD
VESTIDVER RD
LENNON RD
MIDDAUGH RD
HIGHWAY NO. 6
PUSLINCH TOWNLINE RD
CONCESSION 14 E
Fletcher
Creek
SPENCER CREEK WATERSHED MAP
SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan
0 500 1000
LEGEND
Links Between Subwatersheds
Strong Ecological Link
Weak Ecological Link
Trail/Cultural Link
Streams and Watercourses
Valley and Stream Corridor
Public Open Space

FLETCHER CREEK SUBWATERSHED SUMMARY

AREA: 3436 ha

MUNICIPALITIES: Puslinch, Flamborough

LAND USE: Agriculture/Rural 56%
Natural Area/ESA 44%

IMPERVIOUS AREA:
Present Conditions 0%
Future Conditions 0%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Beverly Swamp (ESA#17)
Fletcher Creek Swamp Forest (ESA#18)

CATCHMENT AREAS

Headwaters North

Stresses:
- Highway #6 Expansion
- Groundwater Protection

Opportunities:
- Fish Habitat Projects
- Improve Riparian Cover
- Remove on-line ponds
- Reforestation

Headwaters West

Stresses:
- Agriculture
- Groundwater Protection

Opportunities:
- Fish Habitat Projects
- Improve Riparian Cover
- Remove on-line ponds
- Reforestation
- Promote Stewardship

Fletcher Creek Conservation Area

Stresses:
- Recreation Development

Opportunities:
- Improve Riparian Cover
- Protect Significant Natural Areas
- Acquisition of Threatened Natural Areas

Headwaters East

Stresses:
- Highway #6 Expansion
- Groundwater Protection
- Rural Residential Development

Opportunities:
- Encourage Highway Design that Respects Natural System
- Fish Habitat Projects
- Improve Riparian Cover
- Reforestation

Gore Road

Stresses:
- Road Maintenance
- Rural Residential Development

Opportunities:
- Encourage Road Maintenance that Respects Natural System
- Improve Riparian Cover
- Reforestation
- Fish Habitat Projects

Concession 10

Stresses:
- Rural Residential Development
- Encroachment into Natural Areas

Opportunities:
- Improve Riparian Cover
- Acquire Threatened Natural Areas
- Reforestation

Lower Fletcher

Stresses:
- Agriculture

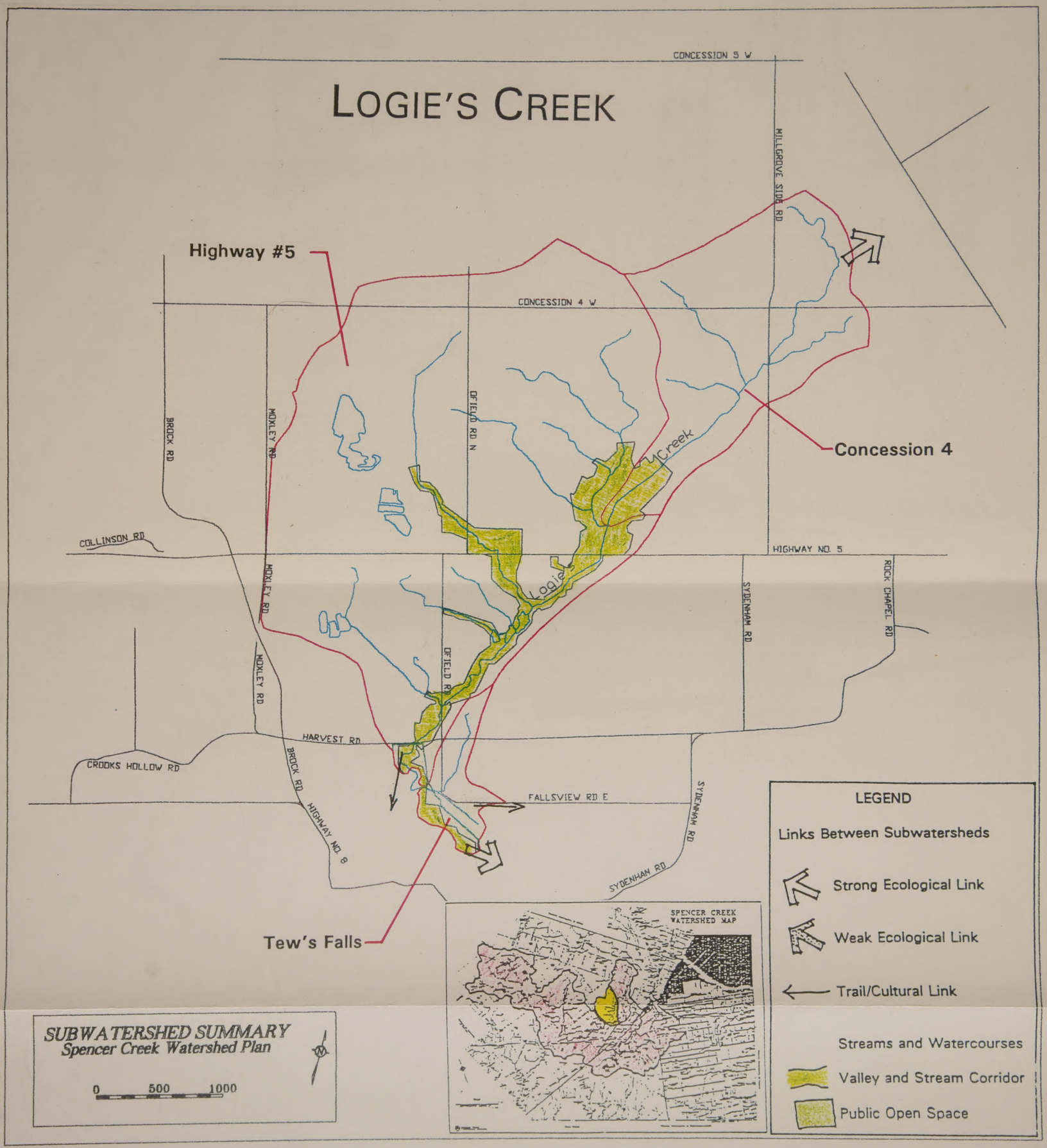
Opportunities:
- Fish Habitat Projects
- Improve Riparian Cover
- Reforestation
- Promote Stewardship

Highway #97

Stresses:
- Residential Encroachment into Natural Areas

Opportunities:
- Reforestation
- Promote Stewardship

SUBWATERSHED PLANNING PRIORITY: low


LOGIE'S CREEK
CONCESSION 5 W
MILLGROVE SIDE RD
Highway #5
CONCESSION 4 W
BROCK RD
MOXLEY RD
DFIELD RD N
Concession 4
COLLINSON RD
HIGHWAY NO. 5
SYDENHAM RD
ROCK CHAPEL RD
HARVEST RD
CROOKS HOLLOW RD
BROCK RD HIGHWAY NO. 8
FALLSVIEW RD E
SYDENHAM RD
Tew's Falls
SPENCER CREEK WATERSHED MAP
LEGEND
Links Between Subwatersheds
Strong Ecological Link
Weak Ecological Link
Trail/Cultural Link
Streams and Watercourses
Valley and Stream Corridor
Public Open Space
SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan
0 500 1000

LOGIE'S CREEK SUBWATERSHED SUMMARY

AREA: 1148.5 ha

MUNICIPALITIES: Flamborough

LAND USE: Agriculture/Rural 71%
Resource Extraction 22%
Natural Area/ESA 7%

IMPERVIOUS AREA:
Present Conditions 1.9%
Future Conditions 4.8%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Millgrove South Woodlot (ESA#12)
Spencer Gorge (ESA#30)

CATCHMENT AREAS

Concession 4

Stresses:
- Rural Lot Development

Opportunities:
- Minimize Development in Vicinity of ESA
- Reforestation

Highway #5

Stresses:
- Quarry Operation
- Residential Development
- Water Taking

Opportunities:
- Encourage Development that Respects Natural System
- Review Water Taking Permit Process
- Increase Riparian Vegetation

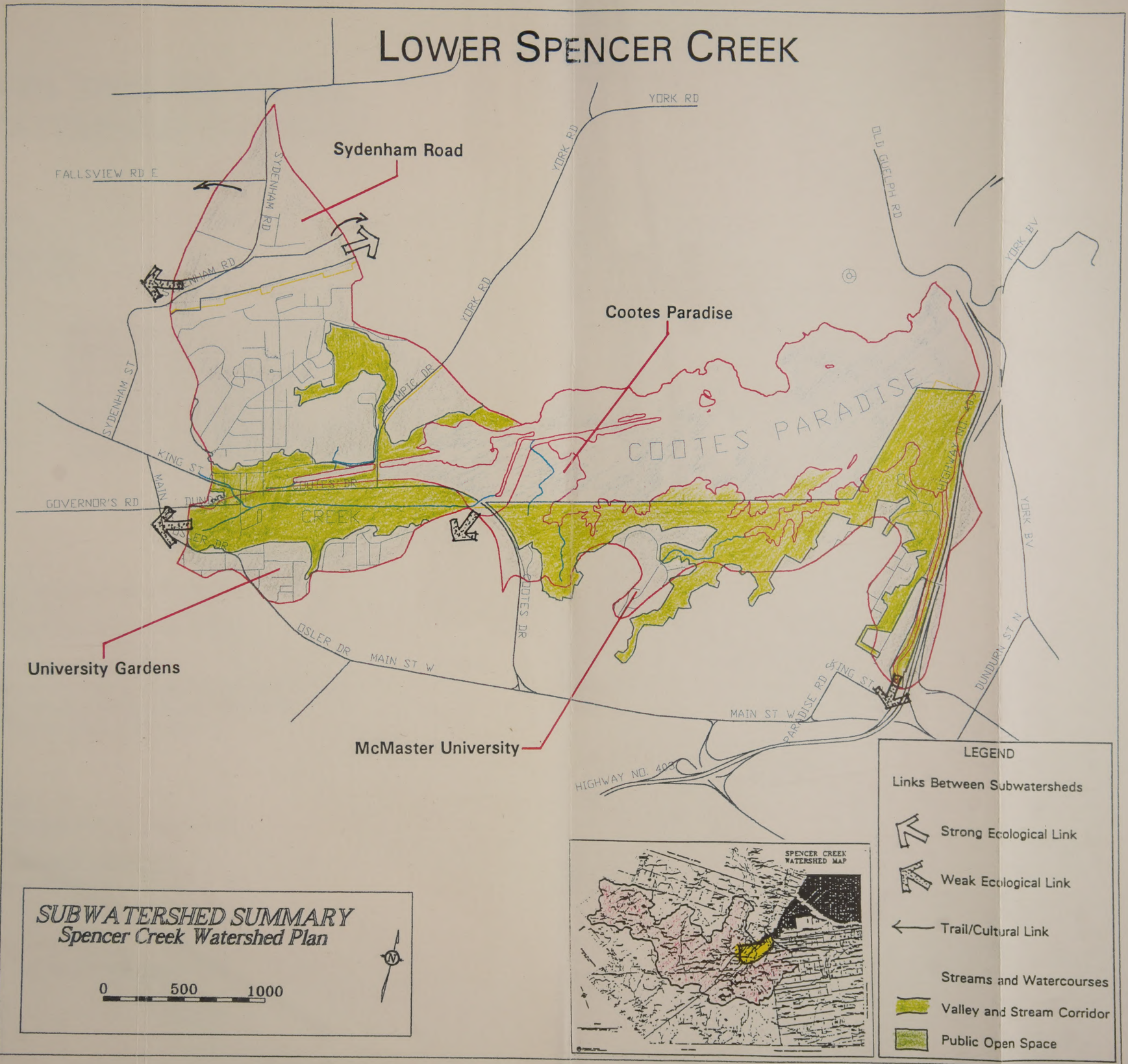
Tew's Falls

Stresses:
- Recreation Activity
- Brow Landfill Site

Opportunities:
- Recreation Management Plans
- Promote Trail User Education
- Detailed Water Monitoring
- Promote Stewardship

SUBWATERSHED PLANNING PRIORITY: medium

LOWER SPENCER CREEK



SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan

0 500 1000

LOWER SPENCER CREEK SUBWATERSHED SUMMARY

AREA: 758.1 ha

MUNICIPALITIES: Dundas

LAND USE: Natural Area/ESA 74%
Urban/Residential 26%

IMPERVIOUS AREA:
Present Conditions 60.8%
Future Conditions 60.8%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Hayesland Swamp (ESA#13)
Hayesland Complex (ESA#28)
Donald Farm Complex (ESA#29)
Spencer Gorge (ESA#30)
Christie Conservation Area (ESA#31)
Dundas Valley (ESA#41)

CATCHMENT AREAS

Sydenham Road

Stresses:
- Urban Run-off
- Development Encroaching into Natural Areas
- Closed Landfill Site
- Barriers to Fish Migration (Weirs & Culverts)

Opportunities:
- Promote Water Conservation
- Encourage Development that Respects Natural System
- Long Term Monitoring of Closed Landfill
- Remove Barriers to Fish Migration

University Gardens

Stresses:
- Urban Run-off
- Residential Encroachment into Natural Areas

Opportunities:
- Promote Water Conservation
- Promote Stewardship

Cootes Paradise

Stresses:
- Sediment Loading
- Carp Activity
- Dundas Sanitary Treatment Plant
- Poor Aquatic Vegetation

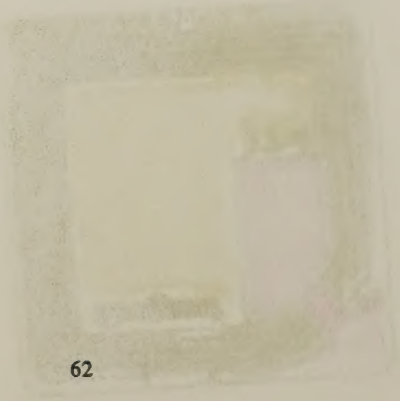
Opportunities:
- Restoration Activities Associated With Project Paradise
- Review of Dundas Plant Operations and Impacts

McMaster University

Stresses:
- Urban Run-off
- Residential Encroachment into Natural Areas

Opportunities:
- Promote Water Conservation
- Promote Stewardship
- Minimize Impacts of Human Access on Natural Areas

SUBWATERSHED PLANNING PRIORITY: low to medium



MIDDLE SPENCER CREEK

LEGEND

Links Between Subwatersheds

Strong Ecological Link

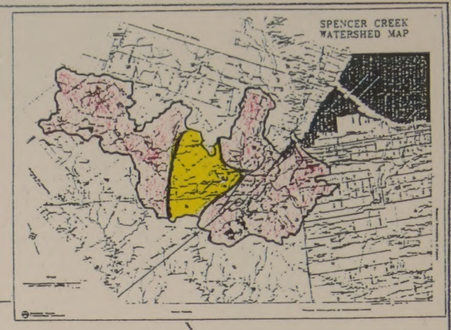
Weak Ecological Link

Trail/Cultural Link

Streams and Watercourses

Valley and Stream Corridor

Public Open Space



Concession 6

Concession 5

Concession 4

Peter's Corners

Crooks Hollow

Webster's Falls

Christie - Upper Reservoir

Christie - Lower Reservoir

Weir's Lane

Highway #8

King Street

Dundas Valley
Golf & Country Club

Governor's Lane Estates

Governor's Road Conservation Area

SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan

0 500 1000

MID SPENCER CREEK SUBWATERSHED SUMMARY

AREA: 5258.9 ha

MUNICIPALITIES: Flamborough

LAND USE: Agriculture/Rural 67%
Natural Area/ESA 23%
Urban/Residential 10%

IMPERVIOUS AREA:
Present Conditions 3.5%
Future Conditions 5.1%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Beverly Swamp (ESA#17)
Westover Lowland Forest & Drumlin Field (ESA#25)
Strabane Southwest Drumlins (ESA#26)
Westover Drumlin Field (ESA#27)

CATCHMENT AREAS

Concession 6

Stresses:
- Water Taking
- Poor Land Stewardship

Opportunities:
- Examine Water Taking Permit process
- Promote Stewardship

Concession 5

Stresses:
- Quarry Operation
- Poor Riparian Zone
- Poor Land Stewardship

Opportunities:
- Acquisition of Threatened Natural Areas
- Improve Riparian Vegetation
- Reforestation
- Promote Stewardship

Concession 4

Stresses:
- Water Taking
- Poor Riparian Zone

Opportunities:
- Examine Water Taking Permit Process
- Improve Riparian Vegetation
- Promote Stewardship

Peter's Corners

Stresses:
- Agricultural Practices
- Development Encroachment into Riparian Zone

Opportunities:
- Promote Stewardship

Christie - Upper Reservoir

Stresses:
- Water Taking
- Poor Agricultural Practices
- Poor Riparian Zone

Opportunities:
- Examine Water Taking Permit Process
- Improve Riparian Vegetation
- Promote Stewardship

Christie - Lower Reservoir

Stresses:
- Erosion
- Water Taking
- Barrier to Fish Migration

Opportunities:
- Bio-Engineering Projects to Reduce Erosion
- Examine the Water Taking Permit Process

Crooks Hollow

Stresses:
- Erosion
- Barrier to Fish Migration
- Water Taking
- Poor Riparian Vegetation

Opportunities:
- Bio-Engineering Projects to Reduce Erosion
- Examine Feasibility of Modifying Crooks Hollow Dam
- Examine Water Taking Permits
- Increase Riparian Vegetation

Weir's Lane

Stresses:
- Residential Development
- Erosion
- Urban Run-off
- Residential Encroachment into Riparian Zone

Opportunities:
- Promote Urban Design that Respects Natural System
- Bio-Engineering Projects to Reduce Erosion
- Promote Water Conservation
- Increase Riparian Vegetation
- Promote Stewardship

Highway #8

Stresses:
- Urban Run-off
- Residential Encroachment into Riparian Zone

Opportunities:
- Water Conservation
- Increase Riparian Vegetation
- Promote Stewardship

Webster's Falls

Stresses:
- Encroachment into Riparian Zone

Opportunities:
- Increase Riparian Vegetation
- Promote Stewardship

Governor's Road Conservation Area

Stresses:
- Residential Encroachment into Natural Areas
- Urban Run-off
- Poor Riparian Zone
- Poor Erosion and Sediment Control

Opportunities:
- Promote Urban Design that Respects Natural System
- Water Conservation
- Improve Riparian Vegetation
- Acquisition of Threatened Natural Areas
- Promote Stewardship
- Monitor and Enforce Erosion and Sediment Control

Governor's Lane Estates

Stresses:
- Residential Encroachment into Natural Areas
- Urban Run-off
- Poor Riparian Zone
- Poor Erosion and Sediment Control

Opportunities:
- Promote Urban Design that Respects Natural System
- Water Conservation
- Improve Riparian Vegetation
- Acquisition of Threatened Natural Areas
- Promote Stewardship
- Monitor and Enforce Erosion and Sediment Control

Dundas Valley Golf & Country Club

Stresses:
- Golf Course Maintenance
- Water Taking
- Urban Run-off

Opportunities:
- Promote Wise Land Stewardship
- Improve Riparian Vegetation
- Examine Water Taking Permit Process

King Street

Stresses:
- Urban Run-off
- Residential Encroachment into Riparian Zone

Opportunities:
- Water Conservation
- Promote Stewardship
- Improve Riparian Vegetation

SUBWATERSHED PLANNING PRIORITY: medium

SPRING CREEK

Copetown East

Weirs Lane

Lower Spring Creek

Southern Headwaters

HIGHWAY NO. 8
MIDDLETOWN RD
WEIRS LN
GOVERNOR'S RD
Spring Creek
BINKLEY RD
SPRING CREEK RD
MINERAL SPRINGS RD
SLUTE RD
POWERLINE RD
KING ST W
SYDENHAM ST
KING ST E
DUNDAS ST
DEER DR
MAIN ST W
WILSON ST E

SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan

0 500 1000

SPENCER CREEK WATERSHED MAP

LEGEND

Links Between Subwatersheds

Strong Ecological Link

Weak Ecological Link

Trail/Cultural Link

Streams and Watercourses

Valley and Stream Corridor

Public Open Space

SPRING CREEK SUBWATERSHED SUMMARY

AREA: 1312.8 ha

MUNICIPALITIES: Ancaster, Dundas

LAND USE: Natural Area/ESA 48%
Agriculture/Rural 30%
Urban/Residential 22%

IMPERVIOUS AREA:
Present Conditions 7%
Future Conditions 7.8%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Dundas Valley (ESA#41)

CATCHMENT AREAS

Copetown East

Stresses:
- Poor Land Stewardship
- On-line Ponds

Opportunities:
- Promote Stewardship
- Remove On-Line Ponds
- Reforestation Projects to Increase Interior Forest Habitat

Weirs Lane

Stresses:
- Residential Development

Opportunities:
- Encourage Urban Design that Respects Natural System
- Promote Stewardship

Southern Headwaters

Stresses:
- Recreational Activities

Opportunities:
- Improve Design & Maintenance of Trails
- Trail User Education

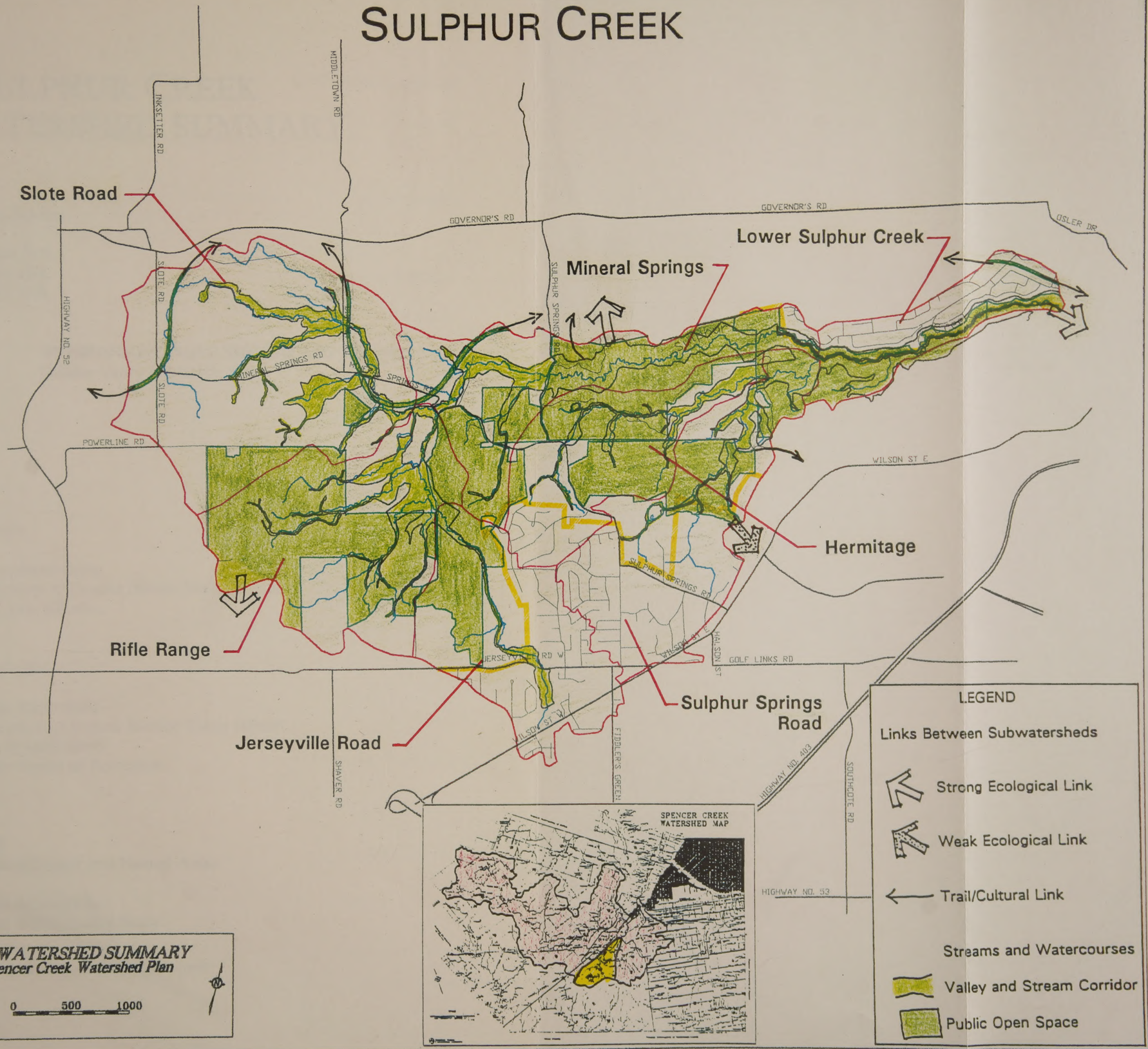
Lower Spring Creek

Stresses:
- ■ Urban Run-off
- ■ Residential Encroachment into Natural Areas
- ■ Erosion

Opportunities:
- □ Detailed Water Quality Study
- □ Fish Habitat Rehabilitation
- □ Promote Stewardship
- □ Increase Riparian Vegetation

SUBWATERSHED PLANNING PRIORITY: low

SULPHUR CREEK



SULPHUR CREEK SUBWATERSHED SUMMARY

AREA: 1803.2 ha

MUNICIPALITIES: Ancaster, Dundas

LAND USE: Natural Area/ESA 71%
Urban/Residential 19%
Agriculture/Rural 10%

IMPERVIOUS AREA:
Present Conditions 4.7%
Future Conditions 9.3%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Dundas Valley (ESA#41)

CATCHMENT AREAS

Slote Road

Stresses:
- Poor Stewardship

Opportunities:
- Promote Stewardship
- Reforestation to Expand Interior Forest Habitat
- Stream Rehabilitation

Rifle Range

Stresses:
- Recreation Activities

Opportunities:
- Promote Stewardship
- Reforestation to Expand Interior Forest Habitat
- Stream Rehabilitation
- Mitigate Impact of Recreation

Jerseyville Road

Stresses:
- Urban Run-off
- Residential Encroachment into Natural Areas

Opportunities:
- Promote Stewardship
- Detailed Water Quality Study

Sulphur Springs Road

Stresses:
- Urban Run-off
- Residential Encroachment into Natural Areas
- Stream Erosion

Opportunities:
- Promote Stewardship
- Detailed Water Quality Study
- Bio-Engineering Projects to Reduce Erosion

Hermitage

Stresses:
- Stream Erosion

Opportunities:
- Bio-Engineering Projects to Reduce Erosion

Mineral Springs

Stresses:
- Stream Erosion

Opportunities:
- Bio-Engineering Projects to Reduce Erosion

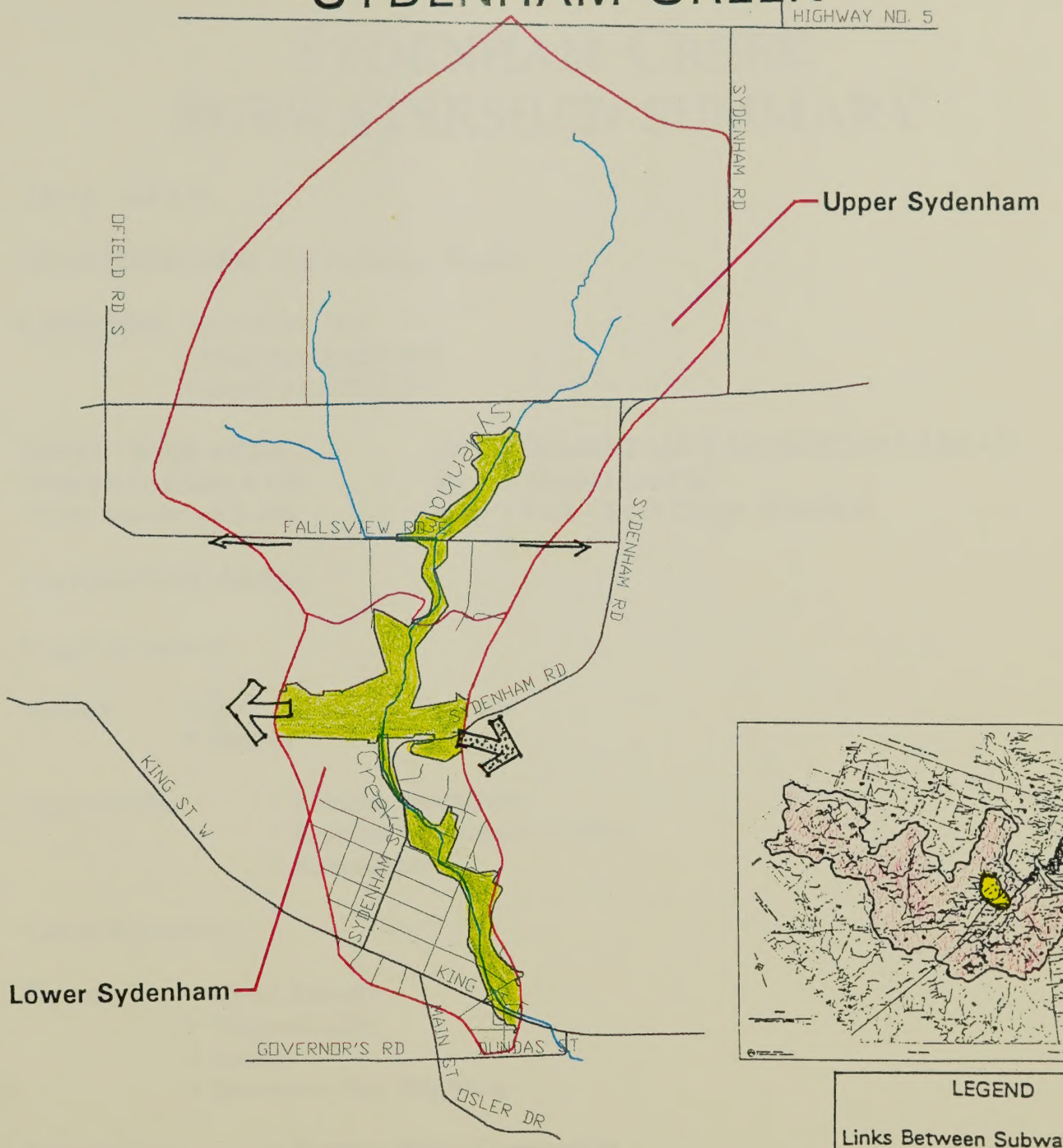
Lower Sulphur Creek

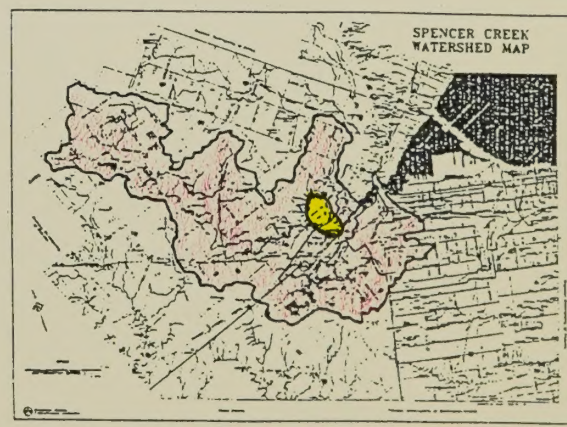
Stresses:
- Urban Run-off
- Residential Encroachment into Natural Areas

Opportunities:
- Promote Stewardship

SUBWATERSHED PLANNING PRIORITY: medium

SYDENHAM CREEK





LEGEND

Links Between Subwatersheds

Strong Ecological Link

Weak Ecological Link

Trail/Cultural Link

Streams and Watercourses

Valley and Stream Corridor

Public Open Space

SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan

0 500 1000

SYDENHAM CREEK SUBWATERSHED SUMMARY

AREA: 464.5 ha

MUNICIPALITIES: Flamborough, Dundas

LAND USE: Agriculture 74%
Urban/Residential 18%
Natural Area/ESA 8%

IMPERVIOUS AREA:
Present Conditions 8.9%
Future Conditions 9.6%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Spencer Gorge (ESA#30)
Borer's Falls - Rock Chapel (ESA#43)

CATCHMENT AREAS

Upper Sydenham

Stresses:
- Poor Agricultural Practices
- Erosion

Opportunities:
- Promote Stewardship
- Establish Watercourse Buffers
- Reforestation

Lower Sydenham

Stresses:
- Urban Run-off
- Channelization
- Erosion
- Barriers to Fish Migration

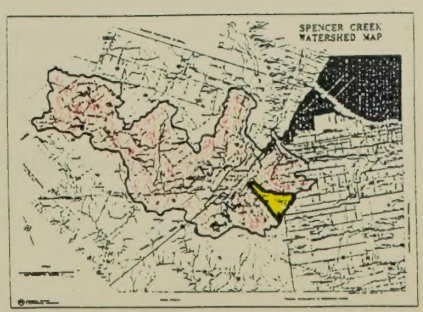
Opportunities:
- Promote Water Conservation
- Channel Naturalization
- Bio-Engineering Projects to Reduce Erosion
- Increase Riparian Vegetation

SUBWATERSHED PLANNING PRIORITY: medium

TIFFANY CREEK

SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan

0 500 1000



TIFFANY CREEK SUBWATERSHED SUMMARY

AREA: 909 ha

MUNICIPALITIES: Hamilton, Ancaster

LAND USE: Urban/Residential 64%
Natural Area/ESA 28%
Agriculture/Rural 8%

IMPERVIOUS AREA:
Present Conditions 6.4%
Future Conditions 29.7%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Tiffany Creek Headwaters (ESA#46)
Tiffany Falls (ESA#44)

CATCHMENT AREAS

Highway #53

Stresses:
- Residential Development

Opportunities:
- Maintain Existing Urban Area

Meadowlands South

Stresses:
- Residential Development
- Encroachment into Natural Areas

Opportunities:
- Encourage Development That Respects Natural System
- Acquisition of Threatened Natural Areas
- Subwatershed Planning

Meadowlands North

Stresses:
- Residential Development
- Encroachment into Natural Areas
- Channelization

Opportunities:
- Encourage Development That Respects Natural System
- Acquisition of Threatened Natural Areas
- Subwatershed Planning
- Channel Naturalization

Golf Links Road

Stresses:
- Residential Development
- Urban Run-off
- Highway Run-off

Opportunities:
- Encourage Development That Respects Natural System
- Promote Water Conservation
- Highway Interchange Naturalization

Tiffany Falls

Stresses:
- Residential Development

Opportunities:
- Encourage Development That Respects Natural System
- Acquisition of Threatened Natural Areas

SUBWATERSHED PLANNING PRIORITY: high

UPPER SPENCER CREEK

UPPER SPENCER CREEK SUBWATERSHED SUMMARY

AREA: 3167 ha

MUNICIPALITIES: Flamborough

LAND USE: Agriculture/Rural 67%
Natural Area/ESA 23%
Urban/Residential 10%

IMPERVIOUS AREA:
Present Conditions 0.01%
Future Conditions 0.01%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Beverly Swamp (ESA#17)
Valens Conservation Area & Drumlin Field (ESA#19)
Westover Lowland Forest & Drumlin Field (ESA#25)
Strabane Southwest Drumlins (ESA#26)
Westover Drumlin Field (ESA#27)

CATCHMENT AREAS

Gore Road

Stresses:
- Agricultural Practices

Opportunities:
- Stream Rehabilitation (Good Cold Water Fish Habitat Potential)
- Reforestation
- Improve Riparian Vegetation
- Promote Stewardship

Concession 10

Stresses:
- Agricultural Practices

Opportunities:
- Stream Rehabilitation (Good Cold Water Fish Habitat Potential)
- Reforestation
- Improve Riparian Vegetation
- Promote Stewardship

Valens

Stresses:
- Valens Dam (Increases Water Temperature)

Opportunities:
- Examine Feasibility of Bottom-Draw Outlet for Dam
- Promote Stewardship

Highway 97

Stresses:
- Weakened Riparian Corridor

Opportunities:
- Improve Riparian Vegetation
- Promote Stewardship
- Reforestation
- Acquisition of Cold Water Riparian Corridor

Beverly Swamp

Stresses:
- Residential Development Encroaching into Natural Areas
- Barriers to Fish Migration

Opportunities:
- Encourage Development That Respects the Natural System
- Promote Stewardship
- Examine Feasibility of Removing Barriers on Private Land

Concession 8

Stresses:
- Residential Development Encroaching into Natural Areas
- Barriers to Fish Migration

Opportunities:
- Encourage Development That Respects the Natural System
- Promote Stewardship
- Examine Feasibility of Removing Barriers on Private Land

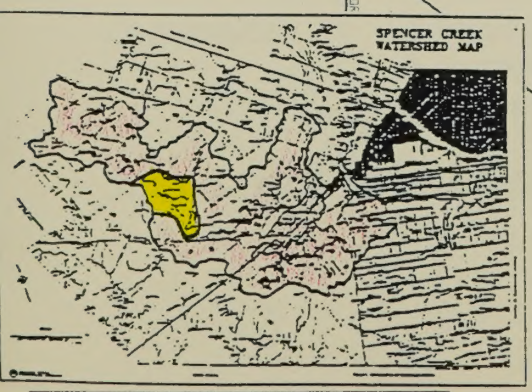
Concession 7

Stresses:
- Poor Land Stewardship
- Weak Riparian Zone

Opportunities:
- Promote Stewardship
- Fish Habitat Rehabilitation (Potential Cold Water Habitat)
- Reforestation
- Acquisition of Threatened Natural Areas and Riparian Zones

SUBWATERSHED PLANNING PRIORITY: medium

WESTOVER CREEK



SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan

0 500 1000

Upper Westover

Lower Westover

SAFARI RD

CONCESSION 6 W

CONCESSION 5 W

CONCESSION 4 W

VALENS RD

WESTOVER RD

MIDDLETOWN RD

SODOM RD

HIGHWAY NO. 8

Westover Creek

LEGEND

Links Between Subwatersheds

Strong Ecological Link

Weak Ecological Link

Trail/Cultural Link

Streams and Watercourses

Valley and Stream Corridor

Public Open Space

WESTOVER CREEK SUBWATERSHED SUMMARY

AREA: 1213.7 ha

MUNICIPALITIES: Flamborough

LAND USE: Agriculture/Rural 83%
Natural Area/ESA 17%

IMPERVIOUS AREA:
Present Conditions 1.7%
Future Conditions 1.7%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Hayesland Swamp (ESA#13)
Beverly Swamp (ESA#17)
Westover Lowland Forest & Drumlin Field (ESA#25)

CATCHMENT AREAS

Upper Westover

Stresses:
- Poor Stewardship
- Residential Development near Westover

Opportunities:
- Promote Stewardship
- Fish Habitat Projects (Potential Cold Water)
- Acquisition of Threatened Natural Areas

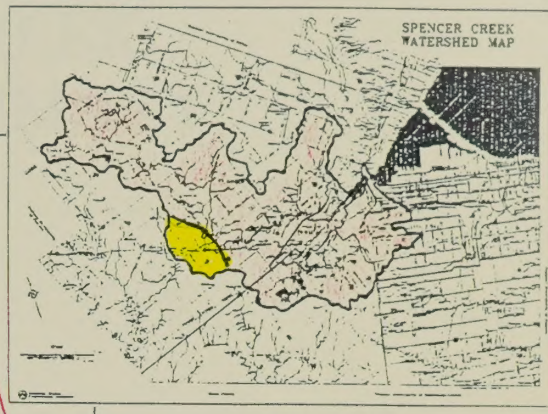
Lower Westover

Stresses:
- Water Taking
- Golf Course Management

Opportunities:
- Review Water Taking Permits
- Promote Stewardship
- Increase Riparian Vegetation

SUBWATERSHED PLANNING PRIORITY: low

WEST SPENCER CREEK



Valens Road

Rockton

Concession 5

Peter's Corners North

Highway 5 & Highway 8

LEGEND

Links Between Subwatersheds

Strong Ecological Link

Weak Ecological Link

Trail/Cultural Link

Streams and Watercourses

Valley and Stream Corridor

Public Open Space

SUBWATERSHED SUMMARY
Spencer Creek Watershed Plan

0 500 1000

WEST SPENCER CREEK SUBWATERSHED SUMMARY

AREA: 1671 ha

MUNICIPALITIES: Flamborough

LAND USE: Agriculture 90%
Natural Area/ESA 10%

IMPERVIOUS AREA:
Present Conditions 1.3%
Future Conditions 1.3%

ENVIRONMENTALLY SIGNIFICANT AREAS:
Rockton Northeast Woodlot (ESA#21)
Rockton-Westover Complex (ESA#24)
Christie Conservation Area (ESA#31)

CATCHMENT AREAS

Rockton

Stresses:
- Water Taking
- Tile Draining

Opportunities:
- Reforestation
- Rehabilitation of Habitat in the Pond at the Community Centre
- Increase Riparian Vegetation
- Promote Stewardship

Valens Road

Stresses:
- Poor Riparian Vegetation

Opportunities:
- Increase Riparian Vegetation
- Promote Stewardship

Concession 5

Stresses:
- Poor Riparian Vegetation

Opportunities:
- Increase Riparian Vegetation
- Promote Stewardship

Highway 5 & Highway 8

Stresses:
- Poor Riparian Vegetation

Opportunities:
- Increase Riparian Vegetation
- Establish Buffers along the Watercourse
- Promote Stewardship

Peter's Corners - North

Stresses:
- Water Taking

Opportunities:
- Review Water Taking Permits
- Reforestation Projects

SUBWATERSHED PLANNING PRIORITY: low

8.0 Implementation

In order to be effective, the Spencer Creek Watershed Plan requires support from the member municipalities and community stakeholders, along with all levels of government. Management recommendations will not be realized unless there is support and a process in place to implement them.

There are two avenues that will be used to implement the recommendations of the watershed plan:

i) through municipal planning documents; and,
ii) through education and community initiatives

Municipal Planning Documents are used to guide the land use decisions of a municipality. There is a hierarchy of planning documents. The Official plan is the guiding document for the municipality. Zoning by-laws provide the site specific zoning which defines land use.

Other planning processes like site plan control, the Niagara Escarpment Commission Development Control, and subdivision process help to make sure that recommendations are included in development proposals.

Implementing through the planning process will require support from all levels of the municipality. Local politicians, municipal staff and the local residents must be aware of the watershed process and ecosystem planning. That is where public education comes into play.

The Hamilton Region Conservation Authority administers Ontario Regulation 151/90, the Fill, Construction and Alteration to Waterways Regulation. This is a useful tool in protecting regulated valley systems and floodplains by limiting the amount of development and grading in the vicinity of watercourses.

Education and community initiatives will be very important to the implementation of the watershed plan. The community benefits from an improved watershed, and should therefore take an active role in implementation.

A number of existing programs in the Spencer Creek watershed already contribute to a healthier community. Conservation groups like the Hamilton Naturalists Club, and the Hamilton Area Fly Fishers and Tyers have been taking an active role in community education and habitat projects. In fact the Hamilton-Wentworth Natural Areas Inventory could not have been completed without support from the Hamilton Naturalists Club.

The watershed plan should help to improve public awareness of watershed issues, and involve those individuals outside the conservation groups. Future initiatives should target the landowners who may not be aware of their impact

on the watershed. The business community would also benefit from learning the important role they play in the ecosystem.

As the political roles and responsibilities change, organizations like the Conservation Authority must adapt to meet the needs of the watershed residents. Through partnerships with the community (private individuals, and corporations) we can continue to promote wise stewardship and planning in the Spencer Creek Watershed.

The following chart provides a summary of all the recommendations in the Watershed Plan.

	MANAGEMENT RECOMMENDATION	AGENCY RESPONSIBLE												TARGETS	TIMING
		Watershed Residents	Private Landowners	Local Municipalities	Region / County	MNR	MOEE	Federal Government	Industry	Conservation Groups	Trail User Groups	BARC	HRCA		
WATER															
1.	Ensure that all lands located within flood or erosion hazard zones are identified and zoned accordingly.			✦									✦	Hazard land zoning in all local and Regional Official Plans.	5 Years
2.	Enforce erosion and sediment control measures in the field.			✦					✦				✦	Improve erosion and sediment control plan compliance by 80%.	2 Years
3.	Develop topsoil preservation bylaws and tree cutting bylaws to protect vegetation and reduce soil erosion.			✦	✦								✧	Topsoil preservation bylaws and tree cutting bylaws in all local municipalities.	2 Years
4.	Encourage restoration of existing channelized watercourses using bioengineering techniques and natural channel design principles.			✦	✧					✧			✦	Habitat restoration projects along 40% of channelized watercourses.	5 Years
5.	Undertake bio-engineering projects to mitigate erosion sites impacting downstream aquatic habitat.		✧	✧						✧			✦	Reduce severe erosion sites by 30% on public lands, and by 20% on private lands.	3 Years
6.	Prevent future piping and channelization of watercourses.			✦	✦	✦			✧				✦	Maintain existing length of watercourses open to "daylight".	Ongoing
7.	Identify, protect and enhance existing stream corridors.	✧	✧	✦	✦					✧			✦	Stream corridors identified in all local and Regional official plans.	5 years
8.	Work to identify, protect and enhance existing wetland resources.	✧	✦	✦	✦	✦				✧			✦	Expand the area of wetlands in the watershed by 5%.	5 Years

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	MANAGEMENT RECOMMENDATION	AGENCY RESPONSIBLE												TARGETS	TIMING
		Watershed Residents	Private Landowners	Local Municipalities	Region / County	MNR	MOEE	Federal Government	Industry	Conservation Groups	Trail User Groups	BARC	HRCA		
9.	Remove barriers to movement along stream corridors.	✧	✦	✦	✦	✧				✧			✦	Identify all barriers. Remove 10% of known barriers on public lands and 5% of known barriers on private lands.	2 Years
10.	Map fisheries information throughout the entire watershed to identify areas at greatest risk and areas for habitat enhancement.					✦				✧			✦	Complete mapping of fisheries resources. Produce a report detailing opportunities for habitat enhancement project in the watershed.	2 Years 2 Years
11.	Review water control structures on public lands and retrofit, or remove as determined feasible.					✧		✧					✦	Provide report on water control structure assessment, and management recommendations.	2 Years
12.	Encourage watershed residents to examine water control structures on private lands, and make changes where necessary to improve aquatic habitat.		✦			✧				✧			✦	Develop technical assistance program for private landowners to assess water control structures.	5 Years
13.	Develop a watershed-wide, water quality monitoring program in cooperation with all parties involved in water quality.				✦	✧	✦	✦	✦	✧		✦	✦	Water quality monitoring program in place.	2 Years
14.	Monitor erosion station and identify priority sites for bio-engineering demonstration project.		✧	✧						✧			✦	Five demonstration projects in the watershed.	2 Years
15.	Work toward a groundwater monitoring program for the Hamilton Harbour Watershed.				✦		✦						✦	Research and feasibility report.	2 Years
16.	Investigate water taking permit process with the MOEE.					✧	✦						✦	Report on cumulative output and baseflow monitoring.	1 Year

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	MANAGEMENT RECOMMENDATION	AGENCY RESPONSIBLE												TARGETS	TIMING
		Watershed Residents	Private Landowners	Local Municipalities	Region / County	MNR	MOEE	Federal Government	Industry	Conservation Groups	Trail User Groups	BARC	HRCA		
17.	Restore native habitat along creek corridors.	✧	✦	✦	✦	✧				✦		✧	✦	Increase riparian corridor by 20% on public lands and by 10% on private lands.	5 Years
NATURE															
18.	Request local municipalities to identify core natural areas and links in planning documents and zone accordingly.			✦	✦	✧						✧	✧	Appropriate zoning in place to protect core natural areas and links.	5 Years
19.	Improve interior forest cover, where appropriate, by infilling areas within or adjacent to existing forested areas.		✦			✧						✧	✦	Increase forest cover, as desirable, in each subwatershed at every opportunity. Aim for a minimum of 10% forest cover throughout the watershed.	10 Years
20.	Protect and enhance natural corridors through parks and publicly owned open space.		✧	✦		✦					✧	✧	✦	Work with park management agencies to naturalize 15% of existing manicured corridors on public lands.	3 Years
21.	Coordinate resource management agencies and community groups to help establish priorities for land acquisition.			✦	✦	✧				✧		✦	✦	Develop a short range acquisition program for threatened and significant habitats within 1 year, and a long range acquisition program within 2 years. Secure funding for the acquisition program through partnerships with local foundations, corporations and community groups.	Short range 1 Year Long range 2 Years

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	MANAGEMENT RECOMMENDATION	AGENCY RESPONSIBLE												TARGETS	TIMING
		Watershed Residents	Private Landowners	Local Municipalities	Region / County	MNR	MOEE	Federal Government	Industry	Conservation Groups	Trail User Groups	BARC	HRCA		
22.	Contribute toward research and updating the Natural Heritage Inventory.				✦	✦				✦			✦	Secure funding for long range maintenance of the Natural Areas Inventory.	5 Years
23.	Ensure that native landscape design principles and plants are used in any development near an Environmentally Significant Area or greenway corridor.			✦									✦	Develop an education package for developers and private landowners.	2 Years
24.	Continue support of existing stewardship program, and enhance public/awareness initiatives.	✦	✦						✧			✦	✦	Secure long term funding for current stewardship program.	2 Years
COMMUNITY															
25.	Request that municipalities endorse subwatershed planning as a required step in assessing cumulative impact for major development.	✧		✦	✦	✧				✧			✦	Watershed planning policies in all local official plans.	5 Years
26.	Ensure safe and efficient operation of infrastructure.	✦		✦	✦									Support the Region's IAMS.	
27.	Reduce demand for new or expanded infrastructure.	✧		✦	✦									Policies in local official plans supporting compact development and redevelopment.	5 Years
28.	Work with municipalities to ensure ecologically sensitive stormwater management plans are implemented for all new development.			✦	✦	✧			✦				✧	Ecologically sensitive stormwater management policies in local Official Plans.	5 Years

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	MANAGEMENT RECOMMENDATION	AGENCY RESPONSIBLE												TARGETS	TIMING
		Watershed Residents	Private Landowners	Local Municipalities	Region / County	MNR	MOEE	Federal Government	Industry	Conservation Groups	Trail User Groups	BARC	HRCA		
29.	Work with road and highway maintenance departments to implement snow dump guidelines.				✧		✦		✧			✧	✧	100% compliance.	3 Years
30.	Work with utility companies to naturalize utility corridors and encourage multi-use.		✧	✧					✦	✧			✧	Agreements in place with utility companies for natural corridor management on 20% corridors in the watershed.	5 Years
31.	Encourage municipalities and trail managers to coordinate trail plans that improve access between urban centres and provide links to parks and rural areas.	✧									✦			Committee in place to coordinate trail development.	1 Year
32.	Support planning for alternative modes of transportation.	✧		✦	✦								✧	Implementation of the Hamilton-Wentworth Bicycle Network. Policies in all local Official Plans recognizing alternative modes of transportation, including cycling and walking.	2 Years
33.	Conduct an accessibility audit on Conservation Authority properties and make changes, where feasible, to improve access.	✧								✧			✦	Accessibility audit.	1 Year
34.	Encourage municipalities to adopt policies to protect culturally significant structures and landscapes.	✧		✦									✧	Policies in Official Plans.	5 Years
35.	Develop a cultural interpretation plan for Conservation Authority properties.	✧		✧									✦	Cultural interpretation plan.	5 Years

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9 - Monitoring

The Spencer Creek watershed is going to change over time. Hopefully, we will see things improve as the recommendations of this watershed plan are implemented. Other things in the watershed may not improve as quickly, or actually get worse, but how are we going to know?

In order to see how far you have gone, you must know where you started from. By tracking ecosystem health, we can chart the progress of the watershed plan. We need a scale to measure these changes. Things like the length of trails in the watershed, or the amount of vegetation along watercourses, are tangible and can be used as "yardsticks" for the watershed.

The watershed yardsticks will empower the community, who will play a vital role in monitoring the progress of the watershed plan. Municipal partners and conservation groups will be implementing the plan recommendations, but the community will help keep track of progress.

The Water Management and Environmental Impact Advisory Board, of the Hamilton Region Conservation Authority, is composed of elected municipal representatives and community appointees. This group will be responsible for tracking and monitoring the progress of plan implementation.

Reporting

In order to keep all stakeholders informed, an annual report on the status of the watershed will be provided by the HRCA. The report will give updates on progress and achievements to date. It is also a good method to maintain interest and awareness of watershed issues.

In order to keep the plan current, a more detailed review of the plan should be conducted every five years. The watershed plan must be flexible enough to respond to changing conditions in the landscape. Monitoring the progress, or lack of progress, will help us adjust plan recommendations, and make sure efforts are directed wisely.

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